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NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

Presidential Address

BY

JOHN W. BRUFORD, M.R.C.V.S.

(SEVENOAKS, KENT)

It happens that my period of office has come at the close of the first half of the 20th century and I am tempted, on this occasion, to review our progress over the past 50 years; years which have seen very remarkable advances in our professional life. We have, however, within our Association, men far more able than I to write this page of our history, and so I leave this task to them and confine my observations to the present and the immediate future.

I venture to think that our forbears, the feature of whose work was their ability to make a correct prognosis, could not have foreseen that the veterinary profession was to become of such immense value, to the agricultural community, to the blood stock industry and to small-animal owners, and to acquire the ability, if given the chance, to ensure that human food of animal origin is safe and of high quality.

I believe we are on the threshold of a new era, during which we shall see the profession take an ever-increasing load of responsibility in protecting human health and in improving the productivity of our livestock industry. The opening of two new veterinary schools and the integration of the remainder within the universities will enable a curriculum to be devised, so wide in its scope that the aspirations of those who realise the value of a veterinary training will no longer be denied. There is no doubt that, slowly but surely, veterinary science is gaining the position in the life of the nation which is its due. That public opinion, however, is not yet alive to the value of the veterinary profession is clearly indicated in the list of salary ranges paid to professional Civil Servants; this list shows the category in which veterinarians are placed as being the lowest but one.

This unwarrantable state of affairs indicates that succeeding Governments have failed to appreciate the value of veterinary science to the nation and Commonwealth. There are, in consequence, some members of the profession who, having little faith in our legislators, regard the increase in the numbers of those entering the profession with dismay, but an increase in personnel is indeed necessary if we are to see veterinary science playing its full part in the life of the nation.

Since the beginning of the last war much attention has been paid to the mechanisation of farming, and to the application of science to crops and soils. Although there have been great improvements in animal husbandry and disease control, much remains to be done, for the future of British agriculture must eventually depend on an extended and economic livestock industry. There is no doubt that the veterinary profession, with its wide training, is fitted above all others to be the disciple of science in all aspects of animal husbandry and the production of food of animal origin high in quality and quantity. Those of us in general practice are aware that advice on nutrition, genetics, husbandry and the marketability of meat and milk, form a large part of our daily work. These subjects are interrelated and cannot be dealt with adequately by a host of individual advisers, many of whom are lacking in fundamental training and are, therefore, unlikely to take a sufficiently wide and balanced view. I am convinced that much valuable information and much good would accrue to both human and animal health if the responsibilities of the profession did not, to all intents and purposes, stop at the farm gate, but were extended right up to the time food is purchased by the housewife. To this end the Chief Veterinary Officer should be made *directly* responsible to the Minister or Ministers, and given full responsibility to correlate the work. (Applause.)

In view of the approach of October 1st, when the new attack on tuberculosis will be launched, I would like to say a few words on this subject. It is clearly the wish of the country in the interests of agriculture and human health that tuberculosis should be eradicated from our herds. This great task will be, to a large extent, the responsibility of the State Veterinary Service; the direction of the schemes and their implementation will be in the hands of the whole-time staff, but one is forced to wonder how the Ministry will cope with this increase in work with its present depleted strength. For some years now there has been little recruitment to this service and the reason is plain to us all. The fact is that the salaries offered are totally inadequate and the chance of promotion is small. The work and responsibility of the Animal Health Division of the Ministry have increased, but there has been no compensating increase in status and salaries. So efficiently and so well has the Division carried out its work in the interests of agriculture and the nation, by the control and stamping out of highly infectious diseases, that the farming community and nation owes the Animal Health Division a great debt of gratitude. (Applause.) The Government has, however, failed to realise that in this Division it has the nucleus of a great service to agriculture and to the health of the nation, by making it responsible for the supply of safe and wholesome food. Time and again one has heard the story that there are not enough veterinary surgeons to do the work. For the same reason we see a mass of committees set up in the counties to implement the wishes of Parliament in respect of animal health and human food when, with but a very little foresight, much of the work could have been done far more efficiently, with much greater understanding, and at less cost to the nation by making proper use of an augmented Animal Health Division. (Hear, hear.) The old bogy of insufficient numbers in the Division could have been dispelled by offering a salary worthy of the men they employ. Indeed, this excuse was used to cover up a failure to implement the recommendations of the White Paper on "Measures to Improve the Quality of the Nation's Milk Supply." The cost to the nation of the eradication of tuberculosis through premiums on milk and beef cattle will amount to several millions; it seems a pity, therefore, to

quibble about the salaries of the few hundred men who do the work. The profession, however, welcomes the task of establishing a national herd, free from tuberculosis; a task which cannot be accomplished overnight, nor without disappointments and frustrations, but one which, with full collaboration of Government and farmers, the profession will, I know, accomplish to the great credit of all concerned. I repeat my previously expressed conviction that all problems relating to animal husbandry and the economic production of foods of animal origin should be in the hands of the profession, and I would point out that there is no greater opportunity for the better appreciation of the standard of husbandry in a herd than during a tuberculin test, and that more sound advice has been given to livestock owners during or following a tuberculin test than at any other time, or by any other body of men. It is fortunate that many farmers realise this and, on these grounds alone, do not support the suggestion that lay testers should be employed.

I must now mention a side of our farm work which, although in its infancy, is rapidly expanding. During the past six years we have seen grow up an artificial insemination service, designed to improve the quality of the dairy herds and, to a lesser extent, beef herds of Great Britain. This service now covers practically the whole of England and Wales. With the exception of a few private centres it is organised and directed by the Milk Marketing Board. Alongside this, and under the same direction, there has grown up the highly important bureau of animal records, the value of which will become more apparent as time goes on and the progeny testing of bulls used at centres develops. In this service the veterinary profession has a large part to play. It is responsible for the technical efficiency of the service. It is the job of the veterinary surgeon at the centre to supply semen which will get the cows belonging to the members in calf, and anything which has any influence on this ultimate aim must come under his charge. The potency of each dose of semen leaving the centre being his responsibility, it is necessary that he should have complete control over all factors which may influence this (hear hear); for example, the health and well-being of the bulls, the training and efficiency of the inseminators and the general co-operation of all the workers at the centre. These factors all demand technical knowledge for their direction and the problems which make up the daily work of the centre manager can only be fully appreciated by a veterinary surgeon. This policy, which is laid down by the Animal Health Division, is, without doubt, correct, and one from which there should be no deviation. The task does not end here, however, as a great number of the apparent failures, and consequent dissatisfactions expressed by farmers, are due to faults on the farm. This, of course, is the province of the general practitioner, but it is also a matter of paramount importance to the centre manager and, I say categorically, that for full efficiency of the A.I. service in this country, there must be the closest co-operation between centre manager and practising veterinary surgeon. The Artificial Insemination Service of this country, its success or failure, whether we like it or not, must largely depend on the veterinary profession and nothing, therefore, should be allowed to prejudice this co-operation. It may be that all the facilities are not yet available for the proper investigation of the problems of herd fertility, and it may be necessary to have at each centre an investigation service working in close collaboration with the practising veterinary surgeons. Whatever the immediate future holds, do not let us forget the important part which the profession must play in this service.

I will leave, for a moment, our work which is associated so closely with agriculture, and say a few words about research as it affects other fields of veterinary work. Most of our research institutes, since they are supported by public funds, earmarked for agricultural improvement, have devoted their attention almost entirely to the health of farm livestock. For this reason the equine and canine world have had less attention. Great advances, it is true, have taken place in anaesthesia and surgical technique to the advantage, not only of these species, but also of farm livestock. This side of our work is also of great national importance, and it will be agreed by all that there is a need for more research in the diseases associated with both horses and small animals. I cannot help feeling that the veterinary colleges throughout the country, being so dependent on Government financial aid, are unlikely to be able to devote much money to such research. Should we not, therefore, encourage, to the fullest extent, the work in this direction being carried out by the Animal Health Trust? An independent body, devoting itself to research, can be of inestimable value, and I think it is up to all of us to support it and to enlist the aid of the animal loving public in financing it. I venture to offer the opinion, to all animal lovers, that money given to support the Animal Health Trust for education and research, would be ultimately of greater benefit to animals than money spent on opening more clinics; particularly in areas which are well provided for by established veterinary surgeons. (Applause.) I firmly believe that, through what has become known as the R.S.P.C.A. " decentralised scheme," the profession is more able than are many of the " free " clinics to give an adequate service to small animals, particularly those requiring expensive or protracted treatment beyond the financial means of their owners. This scheme provides the best possible day and night service throughout the year, and few clinics or organisations can offer its equal. The animal-loving public would do well to realise that, owing to the changed financial circumstances of many owners, there is need for a reorientation of the views held by those whose duty it is to administer the funds at the disposal of those societies whose primary objective is to benefit animals. I have no doubt that financial aid to the Animal Health Trust could bring to our domestic animals much relief from pain and sickness.

Finally, I wish to say a few words on the control of the supply of biologicals. For many years, practising veterinary surgeons, in order to protect themselves and their clients, deemed it their duty to *inject* the large majority of the biologicals used in curative and preventive medicine. Time has shown that a few of these products can be used safely by experienced and capable farmers, provided they are properly instructed. The N.V.M.A. realising, however, that there were many people keeping livestock who were not conversant with the proper use of certain of these biologicals, believed it wise therefore to control their distribution; they therefore prepared a list of products, which it was deemed advisable should not be freely available to the public. They considered that, in the interests of disease control and the maintenance of a close association between veterinary surgeons and the many problems of animal health which arise on the farm, certain biologicals should be made available only through the veterinary surgeon; and that this should be done either by his supplying, prescribing or using them. Anyone seriously considering this problem would agree that, in the national interest, this is well worth while. This point of view was immediately

appreciated and supported by the Pharmaceutical Society. It was also the policy of several manufacturers and one of the largest distributing agents, without any approach at that time from the N.V.M.A., brought its distribution policy into line. The N.F.U. reacted violently to this policy, their main argument being that there would be restriction of the use of these biologicals by reason of the greater difficulty in procuring them.

But, to me, the main fear of the N.F.U. appears to be that restriction of use might arise through an increase in cost to the farmer. It is, therefore, our duty to see that this does not occur. I am confident that members of the profession will not abuse the position which they now hold, and that they will, in fact, see to it that these products are more widely and effectively used than ever before. The close friendship which has grown up between the veterinary surgeon and his farmer client is something of which the profession is justly proud, and is of the greatest importance to the livestock industry and the nation, and I know that this Association will do nothing to prejudice this friendship. The profession has before it an opportunity of using its long experience in the control of animal disease to the benefit of, not one small section of the farming community, but of all sections, and all levels.

I hope, ladies and gentlemen, I have been able to convey to you what I believe to be the policy of the N.V.M.A. on matters which affect our immediate future in order that each and every one of us may strive with a fuller understanding, not only to bring effect to this policy, but above all to justify it. (Loud applause.)

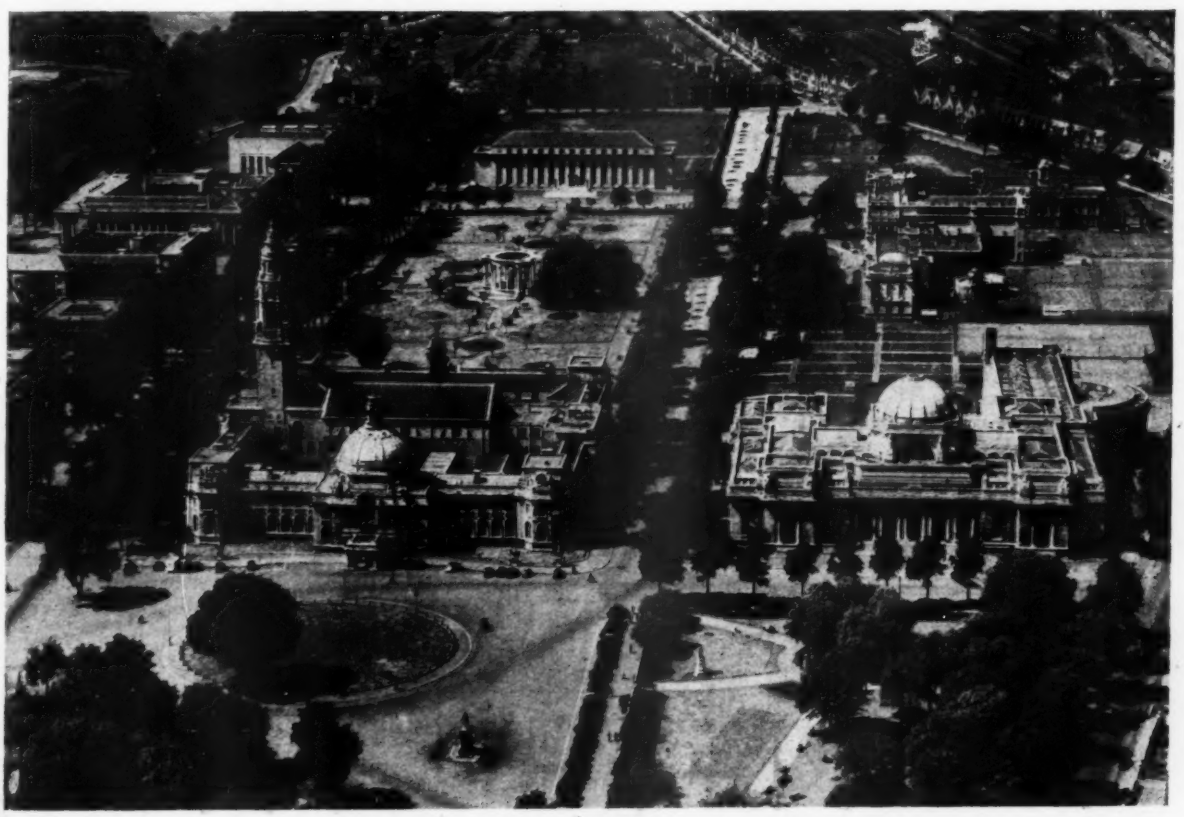
CONGRESS ATTENDANCE LIST

We give below the recorded list of delegates, members and visitors who attended the Annual Congress of the Association held in Cardiff. The names of members who also were delegates are included in the section devoted to the latter.

MEMBERS

(Exclusive of Delegates)

Messrs. J. W. Bruford (President, N.V.M.A.), C. S. Adams, J. Allcock, D. R. Allen, T. H. Allen, G. G. Alton, J. A. Anderson, D. Archer, Miss I. C. Ballard, Messrs. J. R. Barker, J. Barr, E. P. Barrett, J. Bayliss, G. W. Begg, H. Begg, J. R. Bennett, N. M. Black, Professor F. Blakemore, Messrs. J. H. Blanchard, W. G. Blythman, G. C. Brander, J. N. Bowen, J. G. S. Boyle, Miss W. M. Brancker, Messrs. E. Brown, J. Brown, W. Brown, D. K. Bryson, A. F. Butler, H. E. Bywater (Hon. Treasurer), D. Campbell, Dr. J. Carmichael, Messrs. W. K. Carnegie, C. W. Cartwright, Mrs. M. J. Case, Messrs. E. Clark, R. Clark, Miss M. B. Cooper, Messrs. E. R. Corrigall, H. A. Crawshaw, J. A. Dall, F. J. Daly, W. J. Daniel, M. L. Dartnall, D. B. Davies, D. G. E. Davies, Dr. G. O. Davies, Messrs. W. Davies, J. K. D. Dow, Mrs. R. Eden, Messrs. T. H. Ellis, G. V. Edwards, Dr. J. T. Edwards, Messrs. S. J. Edwards, C. M. Ferguson, J. T. Fletcher, C. A. Foden, Miss C. M. Ford, Mr. E. J. H. Ford, Professor C. Formston, Miss M. J. Freak, Messrs. A. M. Fulton, J. F. Garden, Professor R. E. Glover, Messrs.



Aerial View of Civic Centre

By courtesy of Messrs. Terence Soames & Co., Ltd., Aerial & Industrial Photographers, Cardiff.

L. St. Bel Golledge, A. Greig, J. B. Griffiths, R. W. Hall, D. Harkness, J. A. J. Harries, W. T. Harrow, P. D. Hastie, H. F. Hebeler, A. Hector, J. W. Heney, H. R. Hewetson, S. L. Hignett, J. C. Hill, S. F. J. Hodgman (Vice-President), R. D. Holland, J. R. Holmes, Mrs. D. Howell, Messrs. D. L. Hughes, H. V. Hughes, L. E. Hughes, J. H. M. Hughes, J. M. Ingram, Miss O. D. James, Dr. S. Jamieson, Messrs. S. Jennings, E. D. Jenkins, F. V. John, H. M. John, J. B. Johnston, S. M. C. Jones, W. A. Jones, W. O. Jones, Miss J. O. Joshua, Mrs. K. G. R. Kelly, Messrs. D. W. Kerruish, P. Kiddle, J. O. L. King, Dr. J. A. Laing, Messrs. D. A. Lake, H. A. Lamont, J. S. J. Lauder, Miss M. V. Levie, Messrs. M. L. Levi, E. W. Little, R. C. Locke, R. D. Locke, D. Luke, J. Macdonald, Mrs. H. M. Maclay, Messrs. W. I. Maconkey, J. H. McGhee, M. R. MacFarlane, Dr. W. M. McKay, Mr. M. M. MacKinnon, Miss R. M. M. McLelland, Messrs. A. W. MacLeod, T. McNabb, N. H. Mathieson, D. W. Menzies, W. A. Milligan, J. A. Milton, Professor W. M. Mitchell, Dr. R. F. Montgomerie (Vice-President), Messrs. D. G. Morgan, K. G. Morgan, T. J. Morgan, S. J. Motton, J. G. Murray, D. D. Ogilvie, D. E. Orr, Dr. C. W. Ottaway, Messrs. D. O. Packer, R. P. Parsonage, E. A. Pearce, Brigadier E. S. W. Peatt, Messrs. D. R. Perrett, R. S. Pike, J. Plenderleith, W. A. Pool, A. Pottie, L. P. Pugh, W. D. Rees, W. Reid, A. J. S. Reynolds, E. Brayley Reynolds, R. A. Richards, W. B. Robson, I. G. Shaw, A. C. Shuttleworth, J. W. Simpson, H. W. Smith, J. Smith, A. Spreull, Dr. J. Spreull, Messrs. L. P. Stafford, J. T. Stamp, D. B. Steel, A. Steele-Bodger, H. W. Steele-Bodger, J. S. Steward, Q. A. Stewart, J. Stower, Mrs. B. S. Sugden, Messrs. A. Sutherland, T. R. Thomas, A. Thomson (Glasgow), Miss O. Uvarov, Messrs. F. G. Waddington, A. L. Walther, C. Watson, W. Watt, Major J. H. Wilkins, Messrs. E. Wilkinson, D. H. Williams, E. I. Williams, J. L. Williams, Dr. A. J. Wilsdon, Messrs. H. M. Wilson, J. G. Wilson, D. H. Witherington, Miss C. A. Woods, Professor G. H. Wooldridge, Dr. W. R. Wooldridge, Messrs. A. J. Wright, J. H. Wynne, M. Wynne and G. Wyse.

OVERSEAS DELEGATES AND REPRESENTATIVES OF GOVERNMENT DEPARTMENTS AND LOCAL AUTHORITIES

Overseas Delegates

Professor J. H. Bouckaert—representing Union Vétérinaire, Belge.

Professor Birger Carlström — representing the Swedish Veterinary Association.

Mr. F. Gjesdal—representing the Norwegian Veterinary Association.

Dr. A. B. Crawford—representing the American Veterinary Medical Association.

Dr. C. S. M. Hopkirk—representing the High Commissioner for New Zealand, London.

Major C. R. Chadwick, O.B.E., M.R.C.V.S.—as President of the Iraq Veterinary Association.

Representatives of Government Departments

Ministry of Agriculture and Fisheries—Mr. A. D. J. Brennan, M.R.C.V.S., Deputy Chief Veterinary Officer; Mr. L. Hughes, M.R.C.V.S., Superintending Veterinary Officer.

Department of Agriculture for Scotland / *Department of Health for Scotland*—Mr. J. N. Ritchie, B.SC., M.R.C.V.S., D.V.S.M.

Ministry of Agriculture, Northern Ireland—Dr. H. G. Lamont, O.B.E., M.R.C.V.S.; Mr. H. L. McConnell, M.R.C.V.S.

Department of Agriculture, Eire—Mr. P. A. Rogan, Director of Veterinary Services; Mr. P. W. D. O'Connell, Assistant Deputy Director of Veterinary Services; Mr. J. F. Timoney, Director of Veterinary Research; Mr. A. F. O'Dea, Professor of Medicine, Veterinary College; Mr. J. P. Nowlan, Superintending Veterinary Inspector.

Army Veterinary and Remount Service—Lieut.-Colonel J. Clabby, M.B.E., Commandant, Veterinary and Remounts Centre, R.A.V.C., Melton Mowbray; Lieut.-Colonel D. F. G. Smith, A.D.A.V. & R.S., War Office, Droitwich; Captain J. H. Wilkins, O/C R.A.V.C. Laboratory, Aldershot.

Representatives of Local Authorities

City of Birmingham—Mr. C. G. Allen, M.R.C.V.S., D.V.S.M., Chief Veterinary Officer.

Corporation of London—Mr. E. F. McCleery, M.R.C.V.S., D.V.S.M., Clerk and Superintendent and Chief Veterinary Officer of the Metropolitan Cattle Market.

City of Manchester—Councillor R. E. Thomas, Chairman, Markets Department; Alderman J. E. Burgess, Councillor J. E. Fitzsimons; Mr. L. Kirkham, General Manager, Markets Department; Mr. D. E. Orr, M.R.C.V.S., Chief Veterinary Officer.

City and County of Newcastle-upon-Tyne—Mr. Horace Thornton, B.V.SC., M.R.C.V.S., D.V.H., Chief Veterinary Officer.

City of Portsmouth—Mr. R. Scoular, M.R.C.V.S., Veterinary Officer.

County Borough of Preston—Mr. F. J. Proctor, B.SC., M.R.C.V.S., D.V.S.M., Veterinary Officer.

City of Glasgow—Councillor Samuel Gratton; Mr. S. G. Abbott, M.B.E., M.R.C.V.S., D.V.S.M., Veterinary Inspector; Mr. C. B. Somerville.

Visitors from Overseas Attending in a Personal Capacity

Dr. Rohas Maldonado, Dean of Veterinary School of Colombia, S. America.

Mr. H. D. Le Souef (New Zealand Department of Agriculture).

Mr. W. L. C. Purdy (New Zealand Veterinary Services).

Mr. M. T. A. Fouad, B.V.SC. (Egypt).

Mr. Steinar Hauge (Oslo).

VISITORS

Mrs. P. Allcock, Mr. K. I. Bond, Mesdames J. N. Bowen, J. W. Bruford, D. K. Bryson, Mr. R. Burrows, Mrs. M. W. Carnegie, Mr. N. C. Collins, Mesdames M. Dall, J. Daly, Messrs. D. C. Davies, A. Donovan, S. Gratton, Mesdames S. G. Hebeler, M. Hewetson, H. E. Hughes, Messrs. L. Jessop, R. Kirkham, Mesdames C. Lake, J. S. J. Lauder, B. M. Luke, A. M. Montgomerie, S. J. Motton, D. D. Ogilvie, Messrs. R. Paisley, R. Pepper, Mesdames A. Reynolds, J. Simpson, D. O. Smith, Mr. W. B. Somerville, Mrs. Q. A. Stewart, Mr. R. E. Thomas, Mesdames A. Thomson, E. Wooldridge and M. E. Wright.

Undecipherable signature	...	1
Total attendance recorded	...	**264**
Attendance at 1949 Congress	...	374

The horse *v.* tractor argument came up again the other day. A sugar-beet grower backed the horse—for hauling beet from the field. His system was to top beet straight into tumbrils and cart direct to lorries waiting at the roadside. "Can't beat it on heavy land," he said. "It saves tractors idling and eliminates one handling of the beet."—*The Dairy Farmer.*

N.V.M.A. Annual Congress, Cardiff, 1950

H. J. Whitlock & Sons, Ltd., Cardiff.

NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

Annual Congress, Cardiff, September, 1950

The 68th Annual Congress of the National Veterinary Medical Association of Great Britain and Ireland was held in Cardiff from September 3rd to 8th, 1950, under the Presidency of Mr. J. W. Bruford, M.R.C.V.S., of Sevenoaks, Kent.

The first function of the Congress was a reception arranged by the South Wales Division, given in the Park Hotel on Sunday, September 3rd.

OPENING MEETING

The formal opening of the Congress took place at the Cardiff Technical College on Monday, September 4th, when, at 10.30 a.m., a civic welcome to the Association was extended by the Lord Mayor of Cardiff, Alderman George Williams, C.B.E., J.P.

The President of the N.V.M.A., Mr. J. W. Bruford, was in the chair and he was accompanied on the platform also by Mrs. Bruford, Dr. R. F. Montgomerie, Immediate Past-President; Mr. S. F. J. Hodgman, President-Elect; Mr. H. E. Bywater, Hon. Treasurer; Mr. G. N. Gould, Hon. Secretary; Mr. H. F. Hebeler, incoming Hon. Secretary; Mr. J. H. M. Hughes, Local Hon. Secretary, and Mr. F. Knight, General Secretary.

The PRESIDENT: I am now going to call upon His Worship the Lord Mayor of Cardiff, Alderman George Williams, to open this our 68th Annual Congress. Ladies and gentleman,I have the great honour of introducing to you His Worship the Lord Mayor of Cardiff. (Applause.)

The LORD MAYOR OF CARDIFF: I thank you, Mr. President, very sincerely for that very brief introduction. I do appreciate it. As a rule, one has to sit through long speeches—and introductory speeches sometimes can become very monotonous—but you have included in your opening, Sir, everything that should be said. (Laughter.)

It is a very great pleasure to me to extend to you all a very sincere and cordial welcome to the City of Cardiff. I know that some of your folk are acquainted with Cardiff, one or two are resident here to my knowledge, but I suppose the great majority of you have come here for the particular purpose of this Congress, and I welcome you in every sense of the word.

Coming here in the car a few moments ago I was wondering what I should say to you with my " poor lisping, stammering tongue," and I wondered whether for the moment I might be taken as the representative of the man in the street, and whether we are fully appreciative of the splendid work of your Association and of you as individuals, and what a fine contribution you are making. In the busy life of a town the man in the street does not often stop to think of the contribution his neighbour is making to the general life of the community, and it occurred to me that I might stress the humanitarian part of your claim —I do not think it is a misuse of the word—to notice, in its effect upon the health of the animal life of the country, and one cannot praise too highly that great work. Apart entirely from the contribution you are making to the saving and to the preservation of animal life, which is of tremendous importance to this country and to the world at the present time, your work has a direct effect upon the economy of the country. Your work has a remarkable effect upon both animal and plant life. I had a very strange instance of that many years ago. A gentleman with whom I was very closely connected was very badly injured by a young heifer, and eventually it was agreed that a claim should be made upon the insurance company. A claim was made, but the insurance company pointed out that if that gentleman had been injured by a horse, a claim would rank because a horse was a " plant," but a cow was " stock " and no claim could be entertained. No doubt many of you would know about that, but it had never occurred to me to distinguish between a horse and a cow in that sense.

To come back to my subject that the contribution you are making to animal life is beyond praise, but what about the direct contribution you are making to the economic life of our country? If for some reason you failed in your great task—which I am sure will never happen—of dealing with the animal life, the plant animal life, and bird life, what would happen to the human part of it? Your contribution is vital to the well-being of Great Britain and, speaking generally, of the world, and I repeat emphatically that in every sense of the word your profession is a vital one in the interests of the world at the present time, and I am delighted that it falls to my lot to say to you how pleased we are that you have selected this city as the venue for your great conference. I hope your discussions will be productive of something that will be beneficial to you individually, to your Association, and to the nation as a whole.

You have selected Cardiff for this conference. One is very reluctant to say very much in praise of one's own city, and one could be accused of not having that innate sense of good taste if I allowed myself to enlarge upon the beauties of the city, but I hope you will forgive me if I refer to Cardiff as the city beautiful, and I hope you will have opportunities of seeing a city which is almost unique. Many people come to Cardiff expecting to see a coal-besmirched town, and that the terms " Cardiff " and " coal " are synonymous. But that is not so. Cardiff has been dependent upon coal and steel, tinplate and other basic industries; on these things its very livelihood has depended. But Cardiff itself is on the extreme edge of the coalfield and has escaped becoming besmirched by coal dust; the result is that these beautiful buildings of ours are almost as white to-day as when they were constructed 45 to 50 years ago. That is because the coal that is used in this district is, generally speaking, smokeless coal, and even the bituminous coal that is used here is comparatively free from coal dust.

This park where we are now meeting is called Cathays Park. I know very well the buildings here can be compared with many public buildings in the country. We are not so immodest as to put forward the claim that individually the buildings are the best and the largest in the country. I have noted in my travels to other cities that the buildings compare very favourably with ours, but as a group of buildings planned and set out in a park, I think you will agree with me when you have had an opportunity of seeing them, that they are unique, they are jewels in a beautiful setting and very well worth while visiting. (Applause.) I am delighted that you have given us the opportunity by coming here for this conference of placing before you the buildings and the general set-up of our city, so that, although you may come to us as strangers, you may leave us as friends and even as missionary advocates of our great city.

I could not enlarge too much upon the beauties of Cardiff. There is a wonderful castle which has been taken over

from the Marquis of Bute, he very generously gave it to us. We have 200 acres of land adjoining this park—Pontcanna Park; then we have the Llandaff Fields, and running right through is that great River Taff, that street of liquid history—a silver street—though in that street there is a lot to be cleansed. But we have in the city centre 500 acres of open space, lovely in every sense of the word. It is lovely to the extent that we can challenge London, with its Hyde Park, Kensington Gardens, the Green Park, St. James's Park and Regent's Park, we have something here which enables us to say to London, " You are only second-best." We really have excelled in Cardiff. (Applause.)

I think there are one or two Scotch people here. (Laughter.) I am very glad to be able to say that, in spite of the great depression from which we suffered a few years ago, during which we lost nearly half a million people by emigration in search of employment, we have at long last founded one of the finest colonies in the world, that is England. (Laughter.) We have at last succeeded in colonising England, and we regard those 500,000 people as missionaries to a country which really needed them. (Laughter.)

Putting all jokes on one side, I do hope that during your stay here your discussions will be productive of much that will be beneficial to you and the nation, that you will enjoy it, and that you will come to regard your stay in Cardiff as something that will revive in the future echoes of memories that you will retain, and come to regard Cardiff as a place that you should at no great length of time visit once more. (Applause.)

The PRESIDENT: I would like to thank you, my Lord Mayor, for so very kindly welcoming us to this beautiful city of Cardiff, and the words which you used at the beginning of your speech will, I am sure, be very greatly appreciated by all your audience. Sir, we are deeply grateful to you for the welcome which you have given us, for the facilities which you and your Council have with such good will made available to us, and we are looking forward to seeing more of this beautiful city. During the coming week we shall have an opportunity of being your hosts, and I hope we shall be able then in more adequate words than I am using at the present moment, to thank you and your City Council for the very nice way in which you have set going this Congress, the great facilities you have made available to us, and for the freedom of the city of Cardiff for the time we are here. My Lord Mayor, I thank you very much indeed. (Applause.)

(The Lord Mayor then left.)

The PRESIDENT: I think it would be a nice thing if we spared just a few minutes to welcome our guests from overseas, and those who represent Government Departments and local authorities. I will ask Mr. Knight, the General Secretary, to read our list of guests.

(The General Secretary read the list of overseas delegates and Government and local authority representatives included in the Congress attendance list reproduced on page 638.)

The PRESIDENT: I am afraid that our list of overseas delegates is not so long as we have been accustomed to have at our congresses, but it should be remembered that we had the very great pleasure of entertaining a large number of delegates from overseas at the International Congress last year. Nevertheless, to those visitors who are with us for the first time perhaps, and those who have returned, we offer a very hearty welcome. We are very pleased to see you and hope that you will enter into the discussions and into the spirit of the Congress, and whilst you are here regard yourselves, each one, as one of us. I hope opportunity will be found later for those of you who wish to bring messages to us from your Associations to say a few words.

The next part of the proceedings is the opening of the exhibition of drugs and surgical instruments. This will take place in the hall outside. I shall be glad if the meeting will move out there, so that I may open the exhibition.

SHIRE HORSE WARNING

"Shire breeders received an unmistakable warning from Mr. H. T. L. Young, London, when he presided at a Shire Society Council meeting in London last week," states *The Farmers' Weekly* in its issue of November 3rd. "Mr. Young deplored the fact that the modern Shire was losing its weight and did not seem to have any back. He believed that the modern Shire lost his ability for pulling loads when he was five years old. 'I am afraid we have sacrificed size for activity which is not required for the job for which Shire geldings are wanted,' he said."

LAW COURTS. CITY HALL. NATIONAL MUSEUM OF WALES.

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NATIONAL VETERINARY MEDICAL ASSOCIATION OF GREAT BRITAIN AND IRELAND

THE SIXTY-EIGHTH ANNUAL GENERAL MEETING

Public Proceedings

The 68th annual general meeting of the Association was held in the Technical College, Cardiff, on Wednesday, September 6th, 1950, with the PRESIDENT, Mr. J. W. Bruford, M.R.C.V.S., in the chair.

The list of those attending the associated Congress will be found following the President's Address at the commencement of this enlarged issue recording the proceedings of the week.

Following is the list of members who sent apologies for absence from the annual general meeting:—

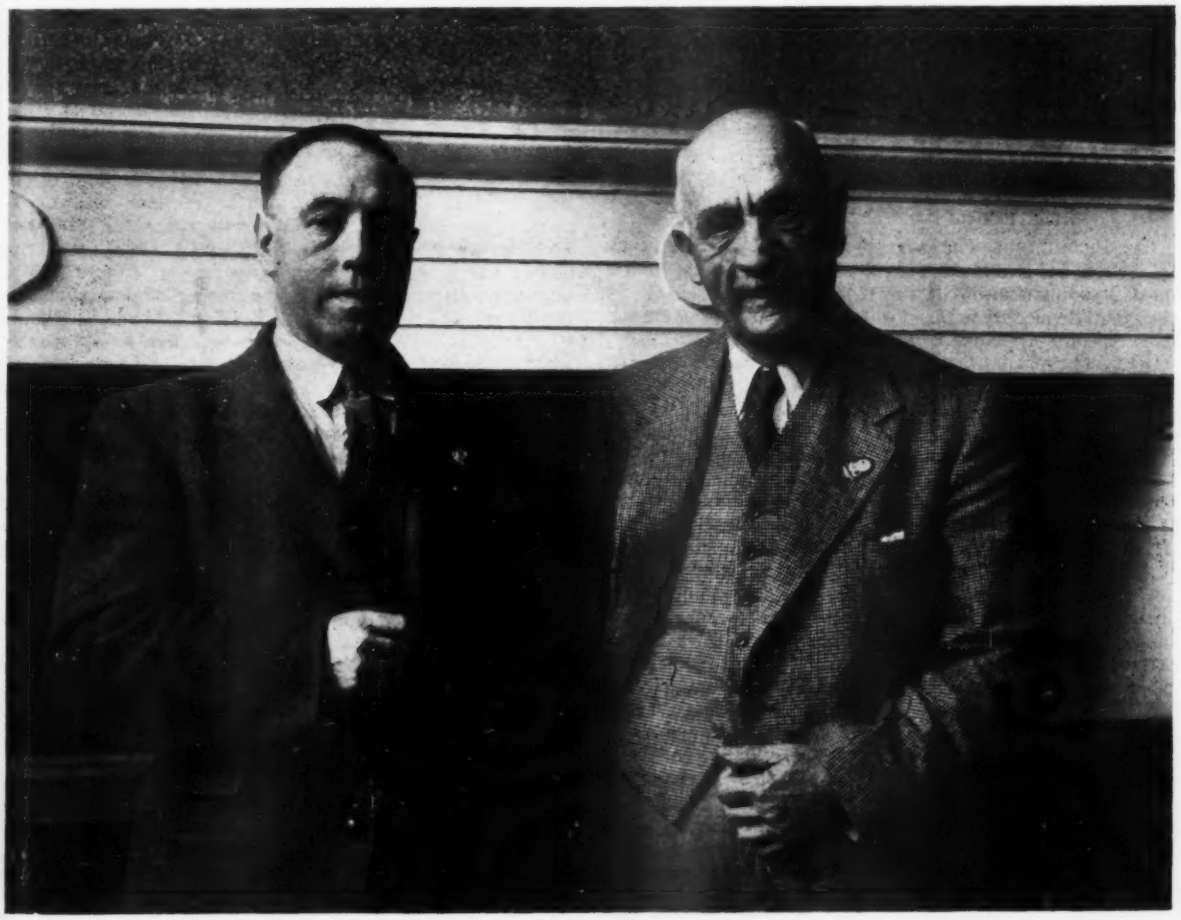
Messrs. A. J. Adams, Guy Anderson, E. P. Barrett, A. J. Beeson, G. K. Buckler, K. E. Brown, Mrs. K. M. Bull, Messrs. E. R. Callender, W. H. Carr, H. W. Dawes, D. W. Deas, Major J. J. Dunlop, Professor J. W. Emslie, Mr. A. V. B. Foster, Capt. J. Fox, Mr. G. N. Gould (Hon. Secretary), Dr. O. V. Gunning, Major R. C. G. Hancock, Mr. P. J. Howard, Mr. T. H. Jones, Professor W. Kearney, Major Hamilton Kirk, Professor J. McCunn, Professor W. C. Miller, Messrs. T. M. Mitchell, A. L. Mullen, G. M. G. Oliver, John D. Peele, Dr. J. K. L. Pearson, Mr. L. E. Perkins, Professor A. Robertson, Messrs. W. G. Robinson, K. C. Sellers, R. Swaby, J. F. D. Tutt, K. G. Towers, A. H. Watson (Bradford), Professor W. L. Weipers, Mr. J. B. White and Professor A. N. Worden.

The PRESIDENT: The first item on the agenda is the notice convening this meeting; I will ask the Secretary to read the notice. (The notice was read by the Secretary.)

PRESIDENT'S ADDRESS

The PRESIDENT: The next item on the agenda is the presidential address. (The President then read his Address from the Chair, which was enthusiastically received. It is reproduced at the commencement of this issue.)

Dr. MONTGOMERIE: It is with the authority of my fellow officers, Sir, that I ask your permission to take charge of the meeting for one minute. While we understand that there is no discussion on the presidential address, we wish to express in appropriate fashion our delight with, and appreciation of, the address we have just heard. If discussion were permitted I feel quite certain it would be a long one, not because a number would wish to speak destructive or even constructive criticism, but because



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Mr. J. H. M. Hughes (Local Hon. Secretary) (L) with (R) Mr. R. W. Hall (Chairman of the Provisional Committee).

every member in the hall would wish to rise and say he agreed most heartily with what you have said. (Applause.)

Ladies and gentlemen, you have heard from the President just the sort of presidential address you expected; it has been quite characteristic of the man, thoughtful, constructive and inspiring. I ask you, ladies and gentlemen, to show your agreement with my proposition in the usual fashion. We wish to offer you, Sir, our warm thanks for that very stimulating presidential address. (Continued applause.)

The PRESIDENT: Thank you very much indeed for the way in which you have shown your appreciation of my effort.

MEETING PLACES FOR 1951 AND 1952

The next item on the agenda, the President continued, is " Meeting places for 1951 and 52." The Council decided to recommend to the annual general meeting that the recommendation accepted last year, " That the annual meeting and Congress of 1951 be held in Eastbourne," be confirmed. Is it your wish that this resolution of the last annual general meeting should stand?

The meeting agreed.

With regard to 1952, invitations were submitted from Hastings, Aberystwyth, Douglas (Isle of Man), Harrogate, Exmouth, Margate and Torquay. After discussion it was decided to recommend to the annual general meeting that the 1952 annual meeting be held in Harrogate. I formally propose that Harrogate should be the venue of the 1952 annual meeting.

Mr. A. J. WRIGHT: I have great pleasure in seconding this proposition.

The PRESIDENT: Is there any discussion?

The motion was put and carried unanimously.

ELECTION OF PRESIDENT FOR 1950-51

The PRESIDENT: The next item on the agenda is the " Election of President for 1950-51." It is the unanimous recommendation of the Council that Mr. S. F. J. Hodgman be elected to the presidential chair for the ensuing year. (Loud applause.) It is with great pleasure that I make this proposition. In John Hodgman we have a man of sterling character, wide experience and great charm. Until his appointment as Director of the Canine Research Station of the Animal Health Trust, Mr. Hodgman was in general practice in Kent, during which time he became President of the Central Veterinary Society and the South-Eastern Veterinary Society. This fact indicates the regard in which he is held in his profession. For many years now Mr. Hodgman has served on committees and on the Council of the Association, and so has a wide knowledge of our work. Those of us who have seen him at work know his broad outlook and the keen interest he shows in matters affecting all branches of the profession. It is my belief that the Association must regard itself as being fortunate in having such a man to occupy the presidential chair. Therefore it is with great confidence and pleasure that I propose his election as President for the ensuing year.

Professor G. H. WOOLDRIDGE: I have known Mr. John Hodgman from his very early days and have been able to assess his value in every phase of his work. I regard it as a great privilege and pleasure to second his nomination as President of our Association. In doing so I would remind Mr. Hodgman if he should be elected, as I hope and feel sure he will be, that he will have no easy time. He has a Past-President to follow who has set a very high standard, but Mr. Hodgman I know will feel quite able to rise to the occasion in every respect.

I have very great pleasure in seconding the proposition that Mr. Hodgman be our President for the coming year. (Applause.)

The PRESIDENT: Are there any other nominations?

The motion was put and carried with acclamation.

Mr. HODGMAN: I am afraid that I am suffering at the moment from rather a severe attack of embarrassment and humility. In consequence I find it a little difficult to convey to you my thanks. All I can do at the moment is to promise you that I will work to the best of my ability to foster the interests of this Association. I thank you all most sincerely. (Applause.)

PRESENTATION OF THE DALRYMPLE-CHAMPNEYS CUP AND MEDAL

The PRESIDENT: No. 5 on the agenda is " Presentation of the Dalrymple-Champneys Cup and Medal for 1950 to Mr. E. Brayley Reynolds." This is one of the most pleasant duties that I have to perform during this week, that is to present on behalf of Sir Weldon Dalrymple-Champneys, who unfortunately cannot be here to-day, the Cup which he so kindly presented to the Association in the year 1934, as the prize to be awarded to any member of the Association who, be he practitioner, research worker, scholar or teacher, has contributed work of outstanding merit to the advance of veterinary science.

This prize is awarded after the most careful consideration by the donor and past recipients, who, being themselves entirely first class, must form a selection committee of the highest order. Therefore, this award has come to be regarded, if I may quote Dr. Edwards, as " the Blue Riband of the Veterinary Profession; in fact, the Veterinary Order of Merit." I am sure, therefore, the selection of Mr. Brayley Reynolds as this year's recipient will be acclaimed by each and every one of us within the profession, and by many outside it. (Applause.) His exceptional ability was recognised in his early days at college, and on qualifying he became a most promising clinical teacher at the Royal Veterinary College, London. When he decided to enter practice his love of horses took him to Newmarket, where he has worked for some 30 years, and latterly, as an examiner in surgery, he has brought his great knowledge and experience to the maintenance of the high standard of skill required by the British veterinary profession. It is therefore as a clinician and surgeon in the thoroughbred racehorse world that we wish to honour him, for he has contributed much, not only to the welfare of that animal, but to the knowledge of veterinary surgery and medicine which has already stood the test of time throughout the world.

It is indeed, Mr. Brayley Reynolds, as a great practitioner that we hold you in high esteem, for in your practice at Newmarket you have won a place amongst practitioners that has earned for you the confidence of the highest in the land.

On behalf of Sir Weldon Dalrymple-Champneys, I have great pleasure in presenting this Cup and Medal to you.

The presentation was made amid loud applause.

Mr. E. BRAYLEY REYNOLDS: I thank you, Mr. President, most sincerely for the very gracious words you have used in making the presentation of this handsome Cup and the D.C.M. of the veterinary profession to me this afternoon. I think I may be permitted to use this latter term, the initials are applicable and our President himself referred to it as an Order of Merit. I thank you, ladies and gentlemen, for the very cordial reception you have given to the President's words and to myself.

I would wish to add my thanks to those of former recipients of this honour for the very kindly and practical interest Sir Weldon Dalrymple-Champneys has shown in the veterinary profession in making this award available.

What can or may I say of the selection committee? Simply to say I was surprised at its decision this year would be a great understatement; to say I was other than very pleased would not be human! and I would confess to the conceit of feeling intense gratification at joining the circle of former recipients of this honour, many are close friends, many even fellow students; and so I also thank the selection committee. But, when I look down the list of the names of former recipients and remember what they have done, much of my conceit is turned to feelings of regret. Regret that I have not done more to earn the honour: more for the profession in general and more for "The National" in particular. May I be permitted to summarise this regret in the words of a great Empire builder when nearing his end, "So much to do, so little done."

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Mr. Frederick Knight.

(Twenty-five years as General Secretary, National Veterinary Medical Association.)

I have been particularly fortunate in living the greater part of my professional life where the horse still reigns supreme, a place where it is bred for other purposes than slaughter, a place that great veterinary pioneer and thinker, Youatt, over a century ago said ought to serve well the advancement of our knowledge of the diseases of the horse, but, he added, where a veterinary surgeon could not gain an entrance or a living. Those were the days when the training of horses was surrounded by great secrecy and was in the hands of a much lower class of men. I had been more fortunate and had gained a ready entrance and had received the greatest encouragement and help from all owners and trainers alike. Unfortunately, however, and I am sure most general practitioners will agree with me, the first four words of those I have quoted, "So much to do," have another meaning, namely, that it is practically impossible to make written records of cases and observations. The general practitioner is at a great disadvantage in this respect with the research worker in an institution. It is a great pity, for in this way much potential knowledge is lost. I well remember as a young man, when I said I had not time to do something, being told to make time, but I never met any physician, ordering this treatment, prepared to commit to paper the recipe for the dispensing of this commodity.

With regard to the reasons for making this award to me, I may perhaps in the field of surgery have helped to prolong the usefulness of certain animals, or even assisted them to gain the rewards of stud life. In the field of disease they may have gained these rewards, in spite of what I may have done. I can perhaps claim to have assisted in the institution of some research and study that has been of general and very great benefit to the thoroughbred, more particularly in the field of breeding, and so my thanks are due to those veterinary surgeons who have helped in this direction.

I was pleased to hear the remarks of the President in regard to the Animal Health Trust. It has a fine research station at Newmarket, and those working there have been of very great help to us; they have aided in the solution of a number of the troubles that afflict our animals. This institution, too, has willingly helped in carrying out a suggestion I made to the Thoroughbred Breeders' Association that courses of instruction should be given to stud managers and stud-grooms the better to enable them to carry out the advice of veterinary surgeons in the treatment of animals on their studs.

In conclusion, may I say that perhaps my happiest satisfaction in this award is that, from the action of the selection committee, from the gracious words of our President and from the cordial reception I have received this afternoon, it would appear that in my professional life I have gained the respect and esteem of my fellow men. (Applause.) What better wish and greater reward can human have? Thank you very much. (Applause.)

Presentation to Mr. F. Knight

The President: No. 6 on the agenda is "Presentation to Mr. F. Knight on his 25 years' service as General Secretary of the Association."

There have been many duties connected with the Con-

gress Week which have caused me some thought and anxiety lest the proceedings might not bring pleasure to all concerned. But the presentation which I am about to make will I know give all of us here, and many who unfortunately cannot be here, most heartfelt and genuine pleasure.

In presenting this canteen of cutlery, together with a television set and a wrist watch to our friend and guide, Mr. Frederick Knight, the Association is endeavouring in some small way to show its appreciation of the great work, unfailing loyalty and kindness which Mr. Knight has shown, not only to many Past-Presidents of the Association, but to all those who have sought his help and guidance over the past 25 years during which he has been our General Secretary. Mr. Knight, having been initiated into the frailties, aspirations, ethics and *esprit de corps* of the profession within the portals of the Royal College of Veterinary Surgeons by the late Dr. Fred Bullock, has brought a level of service to the Association for which we are truly grateful. It is perhaps only when one is President of this Association that one realises how very heavily the Association leans on the General Secretary, and it is fitting therefore that at the end of this year, which must have been almost his heaviest year, I should have the honour on behalf of every member of the Association to present the gifts which are tokens of the good will and the high esteem in which we hold him. Mr. Knight, I present this canteen, this wrist watch, and the television set which has already been installed in your home, with the best wishes of the Association, and the hope that for many years to come you and your family will treasure them, derive pleasure from them, and recall the grateful thanks of the Association. (Loud applause.) I think that now our Editor, Mr. Brown, wishes to address you.

Mr. W. Brown: Thank you for the opportunity of saying a few words, Mr. President. It is probably because I am the doyen of the Association's staff, and also because this year I happen to have joined the select company of those who have been members of the Association for 30 years, that I have been accorded the privilege of adding just a word on behalf of those who work for you at 36, Gordon Square.

The staff there know full well the quality of their chief. We are a very happy little company, and I think that is due very largely to the influence of Mr. Knight. We are all very proud of his achievements and we share with you to the full the affection which you have shown for him. (Applause.)

I have happened to sit for these 25 years—rather literally as you will have observed—at the feet of a series of Presidents—and every one of them without exception, or apparent fear of being contradicted, has said that he alone, amongst the members of the N.V.M.A., could assess the value of the work of Mr. Knight to this Association. I can assure you that Fred and I have often laughed that one off. (Laughter.) But I am sure you will agree, and Mr. Knight certainly will do so, that there are many occasions when the application in office practice of some of these qualities of which you have heard do represent a very considerable strain and perhaps a sudden access of exertion upon the secretarial staff. Of course, that is a quite normal position for the editorial staff—(laughter)—especially when we are threatened with printers' strikes and things like that. But there are, as a matter of fact, other attributes which Mr. Knight possesses which I think are of even more importance in staff work. The President has referred to Mr. Knight's kindness to you and to all who apply to him for help. All the time that I have known Mr. Knight—and, of course, 25 years is the period of that—I, too, have known that he could always rely upon the loyal co-operation of the staff, no matter what he called upon them to do. I have always sensed myself that behind the feelings of those who work for him there is an appreciation that he has their welfare at heart. They do not mind what they do for him, and there we have the key to it, the innate kindness of the man. That is primarily why we of the staff would like to be associated with these tributes and expressions of good wishes and good will. (Applause.)

Mr. F. Knight: You have been very kind, Sir, in your remarks about my work for the Association. I am also deeply touched by what Mr. Brown has said and would like to thank you, ladies and gentlemen, for the very kind way in which you have received those remarks.

The decision of the Council to recognise my completion of 25 years as your General Secretary gave me considerable pleasure and I do wish to thank you most gratefully for these beautiful and very useful tokens of your appreciation. I can assure you that they will be greatly treasured by my wife and by me, and will serve as a reminder of what is to me a very memorable occasion.

I have enjoyed serving the profession and am very happy to have been with the Association at a time when so much progress has been made. I could not, however, have coped with the ever-increasing volume of work had it not been for the loyalty of Mr. Brown and the help always most willingly and cheerfully given by the other members of the staff; in particular, I would like to refer to Miss Smith and also to our Accountant, Mr. Fredericks. (Applause.) I have always had the great advantage of the friendship and good will of Mr. Brown, with his very wide experience on the editorial side. I trust I may retain your confidence for many years to come and would again ask you to accept my most grateful thanks. (Applause.)

(The Secretary made several announcements, after which the meeting adjourned for ten minutes.)

The Business Meeting

Annual Report and Balance Sheet

The President: We will now proceed with the second half of this annual meeting, which is for members only. Item No. 7 is "Annual Report and Balance Sheet." I will ask the Secretary to read the auditors' certificate.

The auditors' certificate was read by the Secretary.

Mr. S. F. J. Hodgman: May I propose the adoption of the report.

Dr. Edwards: I second.

The motion was carried unanimously.

Election of Vice-Presidents and Other Officers

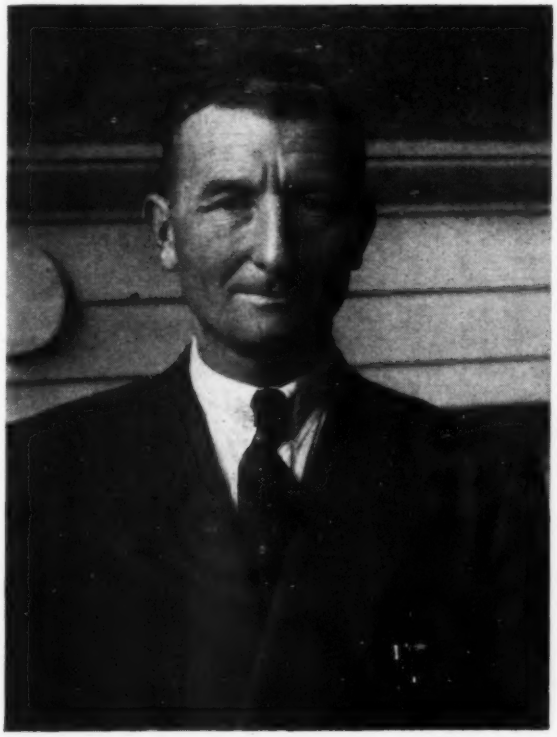
The President: No. 8 is "Election of two Vice-Presidents." The Articles of Association require that the retiring President shall be the Senior Vice-President.

Mr. Hodgman: May I propose accordingly.

Dr. Edwards: I second.

The motion was carried with applause.

The President: I put before you the name of Mr. A. J. Wright, of Macclesfield, as the unanimous recommendation of the Council for the office of Junior Vice-President (President-Elect). (Applause.) I have pleasure in moving this proposition from the chair and I know it will meet with the complete approval of this meeting. Alan Wright is a general practitioner of great repute, living in the northern



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Mr. Alan J. Wright, m.r.c.v.s., Macclesfield
(Junior Vice-President—President-Elect).

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Mr. Henry F. C. Hebeler, m.r.c.v.s., Langport
(Our New Hon. Secretary).

part of the country, and brings with him a degree of experience in agricultural and general practice which the Association has already recognised to be of great value by his appointment to many committees of the Association on which he has served for many years. His experience as Chairman of the Appointments Committee and on the General Purposes and Finance Committee has already been of great value to the Association, and I am confident that in Mr. Wright we have a man who will put the interests of the Association and its members before all else.

I am proud, therefore, ladies and gentlemen, to propose Mr. A. J. Wright, of Macclesfield, as Junior Vice-President and President-elect.

The motion, having been duly seconded, was carried with acclamation.

The President: Mr. Wright, you have been unanimously elected by the annual general meeting as our Junior Vice-President and President-elect, and I congratulate you. (Applause.)

Mr. A. J. Wright: Firstly, I would like to thank you for the very nice way in which you have put this proposition. All I can say is "Thank you very much indeed." I will do my best to assist and further the interests of the Association in every way. I am very proud and pleased to join the team that you see before you, inasmuch as both your President and your President-elect, who will be President in a few moments, were both at college with me, and we were in the college teams together. Thank you very much. (Applause.)

The President: The next business is the election of the Hon. Treasurer. As is his wont Mr. Bywater tendered his resignation to the General Purposes and Finance Committee after the presentation of the accounts. I am glad to say after some pressure Mr. Bywater once again is content to allow his name to go forward, and Council have unanimously recommended that he should again be elected Hon. Treasurer of the Association, and I formally propose Mr. Bywater as Hon. Treasurer.

There being no other nominations, the motion, having been seconded, was put and carried with acclamation.

Mr. Bywater: I thank you very much for your expression of continued confidence in my small abilities and I will do my best to see things through, but I cannot understand it. (Laughter and applause.)

The President: We now come to the election of the Hon. Secretary. According to the Articles of Association, the Hon. Secretaryship may not be retained in the hands of any one member for more than three succeeding years. So we are to lose very regretfully the services of Mr. Gould as Hon. Secretary. After a very successful year as President of the Association, George Gould brought to the post of Hon. Secretary the experience he thus had gained. No man could have worked harder than he has, and his help to the immediate Past-President and myself has been of inestimable value. I am sure you would wish me to convey the deep appreciation of the Association to Mr. Gould for his most valuable work over the last three years, and to wish him a well-earned rest.

It is my pleasure to propose his successor, and this I do now. We are bringing to the ranks of the officers of the Association a young man of great promise who, in spite of a busy practice, will find the time to fulfil his

duties. Mr. Hebeler has already shown his appreciation of the value of the work of the Association both on committees and Council. It is the unanimous wish of the Council that Mr. Hebeler, of Langport, Somerset, should be the Hon. Secretary, and this I have much pleasure in proposing.

Dr. Edwards: I would like to associate myself with this by seconding the motion. Having known all the Hon. Secretaries of this Association since it was established on a federated basis, that is to say from the day when our enterprising Hon. Secretary was Professor Buxton, right up to the present day, when we have had the services of such an eminent practitioner as Mr. Gould, I think it is a remarkable tribute, not only to the veterinary profession, but to Britain generally, that we have among us men who have to earn their daily bread, and yet are prepared to sacrifice so much of their time—and time is money—in the performance of civic duties without hope of reward. I have watched the career of Mr. Hebeler for some time, because the future of an Association of this sort depends upon its ability to recruit youth. I feel we are most fortunate in having a young practitioner like Mr. Hebeler willing and able to give regular services to this Association and keep it the vital instrument it is now in the life of our profession.

The President: Are there any other nominations?

This motion, also, was carried with acclamation.

Mr. Hebeler: First, I must thank you, Sir, and Dr. Edwards for the very kind way in which you have proposed me for this honour, and thank you, ladies and gentlemen, for receiving me so well. I fully realise the difficulty I am going to have in keeping up the standard that has been set in this position in the past. I can only assure you it will be my utmost endeavour to do so in every way possible. Thank you. (Applause.)

The President: I now come to the election of the General Secretary and Auditors. It is the unanimous wish of Council that Mr. Knight be elected as General Secretary. In making this proposition I will spare Mr. Knight's blushes a second time to-day, but I would like to take this opportunity of thanking him and his staff at headquarters for the efficient, kind and helpful way in which they have carried out the wishes of Council and committees; I personally have received the greatest possible help for which I am extremely grateful. Therefore, it is with every confidence that I propose Mr. Knight for re-election as General Secretary.

The motion was seconded and carried amid loud applause.

Mr. Knight: Thank you very much indeed; as in the past I will endeavour to serve the Association to the best of my ability during the ensuing year. I am sure the remarks of the President will be very much appreciated at Gordon Square.

The President: We now come to the election of auditors. I propose that Messrs. Fairbairn, Wingfield & Wykes be elected the Association's auditors for the ensuing year.

Mr. Hodgman: I second.

The President: Are there any other nominations?

The motion was carried.

Mr. Bywater: Mr. President, I should like to carry on your thought, that we should pass a vote of thanks to Mr. George Gould for his services as Hon. Secretary. In moving this, I would remind you that he has had an exceedingly long term of active office. He was in the presidential chair, and served as Vice-President, and on many committees prior to being Hon. Secretary; he has, in fact, served a great number of years very strenuously in the interests of the Association, not altogether without some effect upon his health. It is our sincere hope that he will continue to take an active interest in the Association, as I am sure he will do, and I think the very greatest gratitude is deserved from this Association to him.

I therefore formally propose that a vote of thanks be recorded to Mr. Gould for his services as Hon. Secretary of this Association.

Mr. Barker: I would like to second that and pay my tribute to the sterling work Mr. Gould has done for the Association; he has proved himself a very good friend to all of us who have anything to do with Gordon Square. I regret he is not present to hear what we are saying about him. I sincerely second the motion before you.

The motion was put and carried with acclamation.

The President: Item No. 9.—To consider and if thought fit, pass the following resolutions which will be proposed as special resolutions of the Association.

I will ask Mr. Knight to read No. 1.

Mr. Knight: That Article 11 of the Articles of Association be amended to read:—

> Any member of the Royal College of Veterinary Surgeons and any person whose name is entered on the Supplementary Veterinary Register kept in accordance with Section 6 of the Veterinary Surgeons Act, 1948, shall be eligible for election as a member of the Association. Membership of the Association shall terminate immediately on the name of the member being removed from the Register of Veterinary Surgeons or the said Supplementary Veterinary Register.

The President: I formally propose that this Article 11 of the Articles of Association should be so amended.

The motion was seconded.

Mr. P. S. Hastie (Asnford): I rise to make these remarks: I realise this must come before us for the benefit of the Association, but it is a big and vital step in the affairs of the "National" and the profession. I would point out that in the past the assistants and junior partners have not always been able to attend—I put this before you for discussion—such a step may give rise to some dissatisfaction in so far as these young people cannot attend either to discuss or to vote. Quite a few of these younger people may think that another vital step has been taken without their knowing anything about it.

The President: While appreciating the courage which Mr. Hastie has shown in putting forward the suggestion that the junior members of the Association have not had an opportunity to discuss the amendment, I would remind him that all the Divisions of the Association have had it before them, and I cannot see what more we can possibly do. It has also, of course, been very carefully considered by Council, and I do not think anybody should run away with the idea that we did this without the most careful thought and consideration.

Mr. Hastie: I had no intention of implying that this was done without consideration and I realise that it has been known for some little while, but I wanted to find out what the meeting thought about the whole position of the younger members who are unable to attend even Divisional meetings let alone annual general ones. Perhaps some method could be adopted whereby members who pay their subscriptions and are anxious to take a part in the work of the Association should be given facilities for voting by proxy for any new step that is to be taken.

A Member: I know there is considerable feeling in some quarters against this among members of the National Medical Veterinary Association. These men are only practitioners, and there is rather a difference between veterinary surgeons and veterinary practitioners. I think we should encourage discussion and try to learn the views of other

people as to whether this is a step we are prepared to adopt. These men have just come in, and I think there should be a little period to judge of the calibre of these men as we meet them up and down the country. I think this should be postponed for at least 12 months.

Mr. BYWATER: With regard to Mr. Hastie's remarks on the position of the assistants, I am very conscious of their limited opportunities of attending either Divisional meetings or the annual general meeting of this Association, but I would point out that any member can attend the annual general meeting of this Association or any special meeting that may be called, and I would also draw attention to the fact that the Congress handbook has been circulated to all members of the Association. These resolutions have been before members and we have not received one letter from any member of the Association making constructive or destructive criticisms of this, or expressing any opinion on this particular resolution.

I would also point out before sitting down that if a member is debarred from attending the annual general meeting because it is inconvenient, he can always vote by proxy. That is laid down in the Articles of Association, and about two years ago that right was exercised and a large percentage of our members did in fact vote by proxy.

Dr. EDWARDS: I do not think Mr. Hastie or Mr. Bywater are speaking to order, because this does not arise out of the resolution which is before us. I suggest that their grievances should be brought up under " Any other business." Might we have your ruling on the point of order?

The PRESIDENT: I think this is a matter which should be brought up under " Any other business," but, of course, until Mr. Hastie had spoken, I did not know what he was going to say; therefore, I could not rule him out of order.

Mr. HASTIE: I apologise for being out of order.

The PRESIDENT: I appreciate the reason for which you got up—you need not apologise.

Dr. EDWARDS: I referred to the remarks made by the speaker behind me. I am afraid that what he has said is something which we cannot deal with. You, Sir, remarked that these men are called animal practitioners. It has been arguable whether they should be called by such a name, and by Statute they are veterinary practitioners. They are on our register, namely on the Supplementary Register, and I doubt very much whether we shall lose anything at all by passing this resolution as it stands.

Mr. GEORGE BEGG (Wickham): In view of your ruling, I would like to move that further discussion on this resolution take place under " Any other business," because I cannot see that the matter which has been raised is opportune to the resolution. I heartily agree with the point of view that has been put forward, but if this resolution is passed then those members who share that view can do nothing, because it will be an accomplished fact.

The PRESIDENT: I ruled out of order only the discussion which was arising then on the question of voting by proxy, and that was the only part of the discussion which had developed which was ruled out of order, though I am perfectly prepared to have that brought up under " Other business."

If there is no further discussion, I formally put before the meeting the proposition that the Articles of Association be amended as is before you on the agenda.

The motion was put and carried by a substantial majority.

Mr. KNIGHT: (2) That the Articles of Association of the Association be altered by adding the following new article to be numbered Article 20A, namely:—

" Any member who, in the opinion of the Council, has given long and valuable support to the Association may be elected a life member of the Association by a general meeting of the Association on the recommendation of the Council. Life members shall have none of the liabilities of members and shall not be entitled to any vote, but shall have the right to receive the publications of the Association under Article 18, and the privilege of attending the Annual Congress and such other privileges as shall be conferred upon them by the Council with the sanction of a general meeting. Every life member shall cease to be such upon a resolution of the Council to that effect passed by a two-thirds majority of those present and confirmed by a general meeting."

Dr. EDWARDS: I formally move the adoption of that resolution. It arose out of the wish of the Council to make general the resolution which is put under Item 10 (11) in regard to a most deserving practitioner who has rendered long and distinguished service, and has reached an age when he is no longer in a position to subscribe to the Association. We should on no account debar such a man from membership. Many of us will reach the sere and yellow leaf and probably not be very well off financially, but would like to be still connected with the Association. I do not think we can do otherwise than make that special resolution a general one, leaving it to the discretion of the Association to elect to life membership those who have rendered long and distinguished service to the Association.

Mr. HEBELER: It gives me great pleasure to second.

Dr. W. R. WOOLDRIDGE: I would like to support the resolution, but I hope Council and general meetings in the future will pay particular attention to the words " long and distinguished service." From some of the discussion that has taken place there appears to be a danger of just electing people who have been members of the Association over a very long period, in order to prevent them from resigning. That type of life member we value, but we must not single him out for special honour.

The motion was put and carried.

The next business before the meeting was to consider and if thought fit, confirm a resolution passed by the Council of the Association on July 14th, 1950, under the terms of which, subject to confirmation by an ordinary general meeting of the Association, the name of a certain member should be struck off the list of members of the Association " in that he has, in the opinion of the Council, acted in a way calculated to be prejudicial to the best interests of the Association and that the case be brought before the next ordinary general meeting of the Association for confirmation of this resolution."

The PRESIDENT: In very regretfully proposing the confirmation of this resolution, I would point out to you that the General Purposes and Finance Committee and Council have been put to extreme trouble and have taken very great care before coming to this decision, and I would prefer not to have too much discussion on the point unless somebody wishes to bring it up from any very personal angle. I formally propose.

Mr. A. J. WRIGHT: I also regretfully second the proposition that this resolution be confirmed, and in doing so would like to reiterate the remarks of our President. It is a distasteful and regretful duty that our President has had to perform, but I can assure you that the Council and officers of the Association have done a terrific amount of work on this case and have gone into every detail before

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regretfully coming to this conclusion. I therefore second the resolution.

Mr. HASTIE: I support this without knowing anything about it because I think we should be guided by the decision of the officers and Council.

A MEMBER: I would like to have some more explanation. Has he been removed from the Register of the Royal College, and has he been invited to attend?

The PRESIDENT: In answer to the last part of the question, he was invited to attend the Council meeting at which this decision was taken. He was also invited to attend this annual general meeting and informed that he could have legal representation either at the Council meeting or at this meeting. He has not chosen to attend.

With regard to the first part, that is a matter of consideration for the Association as to whether or not the whole case should go before the College. I think I may say straight away that it is not the job of this Association ever to be an informer. (Applause.) Do you wish to have more information?

The MEMBER: Only on very broad lines.

The PRESIDENT: Briefly, this member, by supplying the office at 36, Gordon Square with certain information, led us to support a claim for a new car, which ultimately we found to be information that was not accurate. After full and careful discussion Council passed this resolution. The resolution is now before you.

The motion was put and carried *nem. con.*

The PRESIDENT: I will ask the Secretary to read a second resolution passed by Council on the same occasion.

The GENERAL SECRETARY: "(2) That in anticipation of and subject to provisions being made in the Articles of Association of the Association, Mr. Richard Hughes, F.R.C.V.S., of Oswestry, be recommended for election as a life member of the Association at the general meeting to be held in Cardiff on September 6th, 1950."

Mr. BARKER: You will remember I proposed the name of Mr. Hughes before the Council meeting, and I do so now with very great pleasure. In regard to the point raised by Dr. Wooldridge, we can say that Mr. Richard Hughes has given long and valuable service to this Association. He has grown old as a general practitioner; during his younger days he was very kind and very courteous to the younger people who came to practise on the borders of England and Wales. His son was an examiner of the Royal College of Veterinary Surgeons and he, too, was a distinguished member of this profession. I think we would be honouring ourselves and bringing very great pleasure to a very distinguished person.

Dr. EDWARDS: I rise to support the proposition moved by Mr. Barker. I know of the services which Mr. Richard Hughes has rendered to the profession in being a great pioneer of our cattle practice. This afternoon we have honoured a great horse practitioner. Many years ago when cattle practice was as it were in the doldrums, Mr. Hughes stood almost alone in this country as being an outstanding cattle practitioner. The proposition to elect Mr. Hughes to life membership brings to mind vividly an anecdote dating back now many years. The late Sir John M'Fadyean always averred publicly that during his career as Principal of the London College he had had three outstanding assistants in his time, namely, Hobday, Male, and Motton—nothing, he said, daunted them or tired them, and again, he added, they were most noticeably the men who turned out afterwards to have done best in general practice. Thinking he would like to reward Mr. Male by starting him off afterwards in the world on a profitable career, and mindful probably that it was he who was then being consulted by authorities for recruits to the very few public appointments available, he asked Mr. Male towards the end of the latter's tenure of the post of house surgeon what he would like to enter. After little pause, to Sir John's surprise, young Male's response was that he would like to become employed as an assistant in the best cattle practice in the country. Without hesitation, Sir John put him in touch with Mr. Hughes, of Oswestry. There was no one at that time—of the many big horse practices and very few good cattle practices—who knew better than Sir John did where real merit lay, among all practitioners, in the matter of guidance to the earnest young veterinary surgeon. The result, in the growth of Mr. Male's great Reading cattle practice, happily the forerunner and exemplar of very many more of the kind, has been for long years plain for all to see. It must be comforting for an old practitioner like Mr. Hughes to witness the outcome of the inspiration which he bequeathed to a succeeding generation and which he imparted almost exactly half a century ago. It is again fitting that we should, in turn, recognise it and honour him, as we are doing now.

Mr. Hughes stood alone in this field and enhanced our reputation as a profession. His son, Mr. Tudor Hughes, was one of the new school who combined both a knowledge of veterinary practice and veterinary science, and he was for many years a pillar of this Association. Mr. Richard Hughes must be well over 90: in return for what he has done over so many years in holding his own, we should be glad to make this gesture, because it is the general practitioners who are the backbone of this profession, and in his day he has done more than anybody else to strengthen our backbone.

The motion was carried amid applause.

The PRESIDENT: No. 11 is "To consider any other matters referred from the Council." There are no other matters referred from the Council, so we will pass on to No. 12, "Any other matters that may properly be considered at an ordinary general meeting."

I think the meeting should know that Mr. Bywater is feeling that I shut down the discussion on the acceptance by the Association as members of those people who are on the Supplementary Register, and I should not like to feel that this very important step has not had sufficient discussion. Therefore, I will if you wish read to you a report from the officers to the General Purposes Committee on this point. Is it your wish? (Cries of "No.") Then you are quite satisfied.

Dr. WOOLDRIDGE: I would like to raise one other matter. It is a little strange that at every annual general meeting we should have a resolution reappointing the General Secretary; this comes up at every annual meeting. I know it is in the Articles of Association, but I would like the officers to go into this matter and see if it is possible to alter that particular Article.

The GENERAL SECRETARY: It has been gone into very thoroughly by the solicitors and they have advised the officers that it is absolutely necessary that the General Secretary should be re-elected each year in the interests of the Association; it is according to Company Law.

Mr. WRIGHT: I understood you were going to give an opportunity for the question of the younger members voting to be raised; I should like to see that opportunity given here. I understood it was your ruling that the question could come up under "Any other business."

The PRESIDENT: I thought I had allowed the discussion to be reopened on that point by suggesting that we should

read the report of the officers to the General Purposes Committee; it is quite true I did rule that, but it was on the part relating to voting by proxy that was to come up under "Any other business." If there is any discussion on that point I would welcome it.

Mr. HASTIE: I am not going to open a discussion, but I would like to emphasise the point that I brought the matter up because I thought it was the right time to do so when the vital point was discussed. I was unaware of the fact that one could vote by proxy, but appreciate that this is no excuse. I was not objecting to the Article, and I voted in favour of it. My point was that recently, as an assistant, it was only through the good offices of my late chief that I was able to attend and enjoy the meetings. I feel that, as a younger member of the profession, I can speak for many youngsters who just cannot get away even if they were willing to pay subscriptions to Divisions. Their "National" membership doesn't get them very far. Their Divisional membership does not, therefore, get them very much farther, and while we realise that members elect other members to act for them on the National Council, there are certain points which should be discussed at Divisional meetings. I do not know whether a proxy vote can be given at a Divisional meeting as well as at this meeting.

A MEMBER: The question Mr. Hastie has raised is entirely a professional one. If a member cannot attend, it is up to the practitioners who are here to allow their assistants to attend meetings.

Mr. WRIGHT: Further to what Mr. Hastie said, many of you probably listening to him will have a great amount of sympathy with what he said with regard to assistants, but I would like to point out that it is the firm policy of the officers and Council of this Association that in matters relating to major policy of this Association, nothing is decided by the Council or by the officers until that matter has been communicated to every Division. Every Division is consulted and their views are noted, and their resolutions accepted before any decision on major policy is taken by the Council. Realising the difficulty of the younger people who are assistants, surely the Divisional meeting is the best possible place where many of them will be able to attend and express their views.

Mr. S. J. MOTTON: Many of you have been running Divisions for some time with some little difficulty, and I have been wondering for some time whether we should not call at least one meeting a year when the old folks would stay at home and only the young ones attend.

Dr. H. WILLIAMS SMITH (Houghton, Hunts): I would like to extend my sympathy to what Mr. Hastie has said; Mr. Brown has generously published my letters on this subject.

I would like to press that the Council be asked to consider the possibility of having ballots on matters of major importance. The proxy vote is not the same thing.

The PRESIDENT: I must point out to Mr. Hastie and Dr. Williams Smith that when any question of policy is sent from Headquarters to Divisions, it is for the Division to decide how it should consult its members. If any assistant who is a member of a local Division feels he is unable to express his wishes, he should get in touch with the Division and try to get things altered. It is not the job of Headquarters to decide how the Division shall run its affairs.

Dr. WILLIAMS SMITH: I was only thinking that at an annual general meeting matters should be decided by ballot.

Mr. HEBELER: I feel Mr. Hastie is referring to the fact that these subjects are referred to Divisions. The agenda of Divisions is sent to Divisional members, and under the heading "Correspondence" come all these points from the N.V.M.A. If the member is unable to attend the Divisional meeting he has no knowledge of what the point is that has cropped up.

I would suggest that Council consider at a later date that should any major resolution, such as we have had to-day, be proposed at an annual general meeting, a note be inserted in the body of *The Veterinary Record* that such a major resolution is being proposed, pointing out that it has been circulated to Divisions and published in the Minutes of Council in the Supplement to *The Veterinary Record* which has been sent out before the annual general meeting, and also in the handbook, and pointing out that a proxy vote can be arranged if members so desire and will write in to Gordon Square. I think that would settle this point.

A MEMBER: I would like to support that; so far as I am aware this has never been discussed at any of our meetings. Our President is here and we are quite sure it has never been discussed at our Division. The point here is if this method were adopted we would have an opportunity of settling this. I am certain we have not discussed this. I think Dr. Smith's and Mr. Hastie's remarks were not directed against the motion, but because they had not seen it before they raised the point.

The PRESIDENT: Mr. Knight will read a letter that was sent to all Divisions.

The General Secretary read the letter.

The PRESIDENT: That letter was sent to Divisional Secretaries on May 8th. Surely you must agree this was a warning to every Division that this matter was coming up for discussion at the annual general meeting.

Mr. HASTIE: We have not had a meeting since then.

The PRESIDENT: I know the South-Eastern has had a meeting.

Mr. HASTIE: I cannot remember it being discussed, and I have not missed a meeting for a very long time.

I must apologise for starting all this. I asked whether Divisional meetings could vote by proxy. Probably you cannot answer that officially here, and I will wait until our next meeting and get an answer. If these people who join Divisions are asked to attend the local Divisional meetings to vote on important points, I think you can take it that any assistant worth his salt would attend or send his views on any subject published on the agenda. If copies of those letters from Headquarters were sent round with the notice convening the meeting, stating what is to be discussed, and telling him to send in his contribution and following that to vote one way or the other, it would give him a feeling of greater participation in what is taking place.

Dr. WOOLDRIDGE: We are a company, and I believe that under the new Company Law no alteration to the Articles of a company can take place unless the proposed change in the Articles is circulated to every member, together with a form of proxy setting out clearly the sense, and giving the member an opportunity of saying either "Yes" or "No" to the particular resolution.

I think under the circumstances we ought really to take the advice of our solicitors upon the legality of the step we have taken to-day.

Mr. BARKER: If 50 per cent. vote against it, you can ask for a ruling.

The PRESIDENT: I am afraid I am not a solicitor and I cannot argue with Dr. Wooldridge on this point of Company Law; all I can tell him is that everything we have done this afternoon has been put before the solicitors of the Association, so that everything is in order. We have been

assured that what we have done is absolutely in order, and I think we can take it that the advice of our solicitors was, in fact, good.

Dr. WOOLDRIDGE: We can still cover ourselves by asking their advice on that specific point.

A MEMBER: There are some people who do not belong to the N.V.M.A. and have not the privilege of attending Divisional meetings. I once attended one with great difficulty and then had no opportunity of making my views known. I think it is a great mistake that assistants should not have an equal opportunity of making their opinions known on matters of importance. To raise matters at meetings which they are unable to attend is a great mistake.

ANOTHER MEMBER: Is the last speaker referring to Divisional meetings? They make their own rules and it is up to the Divisions not to the National. I think the speaker should take that matter up with his own Divisional officers.

A DIVISIONAL OFFICER: If we have a matter of importance we send a notice round to the Divisions; if members cannot attend they are automatically cut out.

The PRESIDENT: The point that has been raised is very important, because, of course, there are many members of the "National" who are not members of a Division, and I think it is a thing which the officers will have to go into. I thank you, Mr. Hastie, very much for bringing the point up.

A MEMBER: Might I very briefly raise the matter of the time allowed for discussion. We have had some exceptionally good papers, and in each case the discussion has been very badly planned. After members have spent a great deal of time writing papers, I think it is a great pity we should not have adequate time to discuss them. This has not only happened this year, but in previous years.

The PRESIDENT: It is laid down in the Articles of Association that time should be allowed for discussion, but unfortunately I think we have tripped up in the past and this year in allowing more than one opener to the discussion. I think it is also to a certain extent the fault of the chairmen who have allowed speakers to over-step their time. But it is often extremely difficult to get people to condense their remarks into the requisite 20 minutes. It may be we will have to have a further discussion about this matter on the Provisional Committee next year, and consider the whole point.

As there is nothing further for discussion, I adjourn this meeting until Friday, September 8th, at 2.30.

THE TECHNICAL COLLEGE (WHERE THE SCIENTIFIC SESSIONS WERE HELD)

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THE VETERINARY RECORD
NOVEMBER 18, 1950

THE 68th ANNUAL GENERAL MEETING

ONCE again the Association can congratulate itself on the success of its Annual General Meeting and Congress. Following upon the XIVth International Congress held in London last year it would not have been surprising if the return to our own more intimate but rather less ambitious gathering had proved to be something of an anticlimax, but nothing would have been further from the truth.

The Provisional Committee had compiled a programme which attracted an attendance of members well worthy of the occasion, and it was quickly realised that the decision to accept the invitation to hold the Congress at Cardiff had been an extremely happy one.

Those of us who had never before visited the City of Cardiff and its Civic Centre were immediately impressed with its beauty and the wonderful setting it provided for the holding of a congress be it large or small. Indeed, Cardiff is the venue of an unprecedented number of similar functions each year. The Association was fortunate to have the Technical College placed at its disposal for meetings, for film shows and the exhibition of drugs and surgical instruments. The Cardiff Mental Hospital Farm provided an adequate place for the demonstrations and the conditions under which the demonstrators worked resembled those under which veterinary surgeons are most often called upon to do their work.

The Committee had suggested subjects for discussion associated largely with the work of practising veterinarians; they must have felt gratified at the very high standard of the papers presented and the large attendance at all meetings. The grateful thanks of the Association are due to those who obviously had given so much time and thought in order to present to Congress, and to the farming world, the invaluable work which the readers and other members of the profession are doing to elucidate the many problems which beset our livestock industry.

The whole-hearted support given to the Congress by the South Wales Division and by many from the South and West of England was the foundation for the happy gatherings enjoyed each evening; a strong and very welcome representation from Scotland and Ireland also brought to these occasions that air of gaiety and friendship by which the social functions of our Congresses are characterised.

From Cardiff we shall take memories of kind hospitality, beautiful singing, a banquet of proper dignity yet shorn of ponderously long speeches, and above all a camaraderie which perhaps has been unsurpassed and which augurs well for the future relations of all branches of the profession.

We look forward, then, to another year of endeavour under the able leadership of our new President whose genial qualities will foster the good fellowship which long has been the hallmark of membership of the N.V.M.A.

WEEKLY WISDOM

"I would not be surprised to hear that there are people who read criticism—musical, literary, political, or heaven knows what else—for the excellent reason that old Selden gave for attending the debates of the Westminster Assembly of Divines, 'to enjoy the Persian pastime of seeing wild asses fight.' . . . 'Criticism,' I imagine, is destined to pass through three stages. In the first, everyone talks and everyone listens: . . . In the second, everyone will still go on talking but no one will listen. In the third, when it becomes evident that no one is listening, no one will talk: 'et le combat finit, faute de combattants.' And while it lasts, that phase will be the new Golden Age"—ERNEST NEWMAN: "The Three Ages of Criticism," *The Sunday Times*, October 22nd, 1950.

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S. F. J. HODGMAN, M.R.C.V.S.

President of the National Veterinary Medical Association of Great Britain and Ireland, 1950-51

S. F. JOHN HODGMAN, M.R.C.V.S.

President of the National Veterinary Medical Association, 1950-51

In John Hodgman the Association has elected as its President one well qualified by temperament and by experience to carry on a tradition of vigorous leadership. It was perhaps his active and adventurous mentality, which prompted him to take an otherwise unexpected early decision. For having been born—in 1896, at St. Lawrence in the Isle of Thanet—into a family which had been for years connected with the veterinary profession and having himself been brought up in the atmosphere of veterinary work, nevertheless he decided to make the Army his career.

On leaving King's College, therefore, he was entered at Sandhurst and was within a few weeks of his first term when the 1914–18 war broke out. Like many other young men of his generation he feared the war might not last more than six months and, anxious not to miss it, he enlisted on August 7th, 1914.

He served in France and was promoted to the rank of sergeant, was seriously wounded and sent back to England and, on his recovery, was offered a commission. Service as an officer followed in Northern Ireland, again in France, and finally he obtained a permanent commission, being transferred to the Indian Army.

Mr. Hodgman served in India till 1923 when the disbanding and cutting down of Indian Cavalry Regiments led him to resign his commission and enter the London Veterinary College, with the ultimate object of obtaining a commission in the R.A.V.C. While a student he played rugger for the College and for London University, captaining the former team for one season.

Unfortunately, when he qualified in 1927 the Corps was much diminished and prospects in it were not very encouraging: consequently Mr. Hodgman decided to enter general practice and became assistant to Major Pugh in Sevenoaks. In 1928 he married Dorothy, younger daughter of Sir Theodore Piggot, High Court Judge of India. In 1929 he accepted an offer of partnership made to him by the late Mr. Cornish-Bowden, of Beckenham, where in addition to his small-animal work he took over all the large-animal part of the practice.

Shortly after the outbreak of the late war he accepted an appointment in a part-time capacity at the Wellcome Laboratories where he worked for the duration of the war with Dr. Montgomerie in charge of serological horses. This was something in the nature of a return to an earlier love, for Mr. Hodgman was brought up with horses and has never lost his interest in them, while in India he was for a time attached to Remounts and played polo for his regiment.

The partnership with Mr. Cornish-Bowden lasted a number of years and, on its dissolution, Mr. Hodgman carried on alone till the end of 1947, when he was invited to join the Animal Health Trust as Director of the Canine Research Station at Kennett, near Newmarket.

His name, like that of his late partner, is chiefly associated with small-animal work, in which his main interest was surgery. His most important work has been on the dog and, on the death of Mr. Cornish-Bowden, he was invited to join the General Committee of the Kennel Club. He is also a member of the Show Regulations Committee.

Since qualifying Mr. Hodgman has always taken an active interest in the work of the N.V.M.A., having been the President of both the South-Eastern and the Central Divisions, of which societies, as of the Eastern Counties Division, he is still a member. He has also served on the Editorial Committee, the General Purposes and Finance Committee, the Organising Committee and the Technical Development Committee of the N.V.M.A. His keen interest in the work of all these committees has been of great value to the Association and given him a large insight into its activities.

It will be seen, then, that the Association has once again been fortunate in electing as President a man who has great qualities as a leader with a wide experience of all branches of the Association's work; for as a practising veterinary surgeon and, more recently, as an administrator in the field of research he has an intimate knowledge of all sections of the community who, in one way or another, are concerned with veterinary work.

The Association may look forward, therefore, to a year of progress in the many fields in which we know the interests of our new President lie. We wish him great happiness and success in his year of office.

PAPERS PRESENTED TO CONGRESS

The high and sustained level of attendance at the discussions on the scientific papers, which took place throughout the week at the Technical College, Cardiff, testified to the success achieved by the Provisional Committee in their task of selecting a representative range of subjects of interest. It was unfortunate, however, that, despite the circulation of papers in advance, in those instances where departure was made from the policy adopted in 1947 of devoting the whole of a morning to the consideration of one paper only, the general body of members were deprived—in one case entirely—of the opportunity of contributing their views. Nevertheless, where time allowed, both the papers and the contributions of the openers were supplemented informatively from the body of the hall.

In this issue we publish the first paper to be discussed, that by Mr. S. L. Hignett, B.Sc., M.R.C.V.S., of Frant, on "Factors Influencing Herd Fertility in Cattle," discussion on which was opened by Mr. D. W. Deas, of Lasswade (whose contribution is reproduced herewith, although he was unable to present it and time did not allow of its being read), by Mr. J. Smith, of Carmarthen, and Mr. H. W. Steele-Bodger, of Tamworth. Next week's issue will contain the succeeding paper on "Clinical Diagnosis of Diseases of the Abdomen of the Dog and Cat," by Mr. J. S. J. Lauder, M.R.C.V.S., of Altrincham, together with the discussion, opened by Miss O. D. James (Cardiff) and Mr. J. W. Heney (Dublin). In successive numbers the following papers and discussions will appear: "Some Pig Diseases," by Dr. H. G. Lamont, O.B.E., M.R.C.V.S., Mr. D. Luke, B.Sc., M.R.C.V.S., and Mr. W. A. M. Gordon (Belfast)—openers, Mr. P. L. Shanks and Mr. J. F. Timoney (Dublin); that by the Association's contribution-guest of honour, Professor Birger Carlström, of Stockholm, on "Deficiency Diseases, particularly Acetonaemia in Cattle" (openers of discussion, Mr. R. H. Smythe, of Nottingham, and Dr. J. R. Holmes, of Liverpool); the "Symposium on Diseases of Sheep," by Dr. S. Jamieson, M.R.C.V.S., D.V.S.M. (Aberdeen), Mr. L. E. Hughes,

M.R.C.V.S., Dip. Bact. (Aberystwyth), Mr. W. T. Rowlands, M.R.C.V.S., D.V.S.M. (Bangor), and Mr. J. T. Stamp, B.SC., M.R.C.V.S. (Edinburgh) (openers of discussion, Mr. D. E. Davies, of Llanybyther, and Mr. D. R. Allen, of Cardiff); "Diseases of the Stomach of the Adult Ruminant," by Mr. H. Begg, M.R.C.V.S., Strathaven (openers, Mr. A. T. Morgan, of Carmarthen, and Mr. D. G. E. Davies, of Llandyssul), and finally the paper contributed by Mr. J. R. Lawson, M.R.C.V.S., of Weybridge, on the subject of "Strain 19 and the Control of Brucellosis" (openers, Mr. Alan J. Wright, of Macclesfield, and Mr. Guy Anderson, of Aylesbury).

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No. 1.—FACTORS INFLUENCING HERD FERTILITY IN CATTLE *

BY

S. L. HIGNETT, B.SC. (LOND.), M.R.C.V.S.,

WELLCOME VETERINARY RESEARCH STATION, FRANT, SUSSEX

The Assembly Hall at the Technical College, Cardiff, was crowded on the morning of Monday, September 4th, 1950, for the session devoted to the consideration of Mr. Hignett's paper, when the chair was occupied by Mr. J. R. BARKER, M.R.C.V.S., D.V.H., of Hereford, in the much regretted absence, through illness, of Mr. T. H. Jones, of Llandilo.

The CHAIRMAN: I regret to say that I have to make an apology on behalf of the Chairman who should have been present here this morning. Unfortunately he has been taken ill, and for your pleasure and my displeasure I am deputed to take his place. I propose with your co-operation to try to give everyone a chance to speak on this important paper. I think the paper sets a high standard in clarity of thought and intellectual integrity, and I am sure if you abide by that there will be ample time for everyone to speak.

I will ask Mr. Hignett to address you. (Applause.)

Mr. S. L. HIGNETT, B.SC. (LOND.), M.R.C.V.S. (Wellcome Veterinary Research Station, Frant): I regard it as a great honour to be called upon to introduce the first paper at this the first N.V.M.A. Congress in South Wales. I will not take up much time with introductory remarks, as I wish to conserve the time for general discussion. We appreciate the paper is in large measure controversial and will be strongly criticised. This we do not mind, because we ourselves reserve the right to change our views. We know that some of you do not accept our suggestions concerning nutrition. However, although I want to be as brief as possible, some clarification might well save time in the long run.

When I prepared the first draft of this paper it was over three times as long as the present form; there had to be some drastic reductions, and as a result there are a number of bald statements which might well puzzle some people.

Whilst we appreciate the importance of the individual cow as far as bovine infertility is concerned, we are particularly interested in the herd problem. On page 2 we attempt to define herd infertility in general terms. By "difficulty to get in calf," we mean requiring more than three services per pregnancy. Presumably a conception rate of 50 per cent. or less based on first inseminations should also be regarded as a herd breeding problem. In the herd problem, as with the individual cow, temporary infertility causes much more serious loss than does permanent sterility. It is to be hoped that Mr. Smith, who follows me, will be able to give more definite information about the importance of this temporary infertility, because as Veterinary Manager of the Carmarthen Artificial Insemination Centre he should have at his disposal records which are not available to us at the Wellcome Veterinary Research Station.

That herd breeding problems exist is evident from information we have received from various artificial insemination centres. Mr. Smith has provided us with data which indicate that, although many herds in South Wales have an extraordinarily high breeding efficiency, there are some also inseminated from the Carmarthen Centre which have a low over-all conception rate.

In this paper we have attempted to deal briefly with the majority of factors that affect herd fertility. We have made no attempt to assess the relative importance of these factors, simply because we are not competent to do so.

All will agree that there are infective agents which themselves can lead to herd breeding problems. Amongst these I will mention particularly *Vibrio foetus*. There is no doubt that *Vibrio foetus* infection is a very serious problem in Great Britain at the present time. We have been interested in this organism for a number of years, but it is only recently—and then not as the result of original observations on our part—that we have appreciated the serious breeding problem which rapidly follows the introduction of this infection into a herd. There is an urgent need for work on satisfactory methods of diagnosing and controlling this scourge. Our observations indicate a necessity for differentiating between *Vibrio foetus* infection, and infection with the pleuro-pneumonia-like organism. It is a thousand pities Mr. Deas cannot be with us this morning, because he has had a wide experience of this problem in the field, and would be able to tell us a great deal about this particular disease. I have not seen Mr. Lawson, but if he is here it is to be hoped he will give us the benefit of his knowledge.

Trichomonas foetus is another infective agent which can cause a herd breeding problem. The only point I now wish to make in connection with this disease is that Dr. Lamont has a method of diagnosing Trichomoniasis which will, I know, prove of interest to veterinary surgeons who are trying to cope with this problem.

Apart from these organisms which can give rise to herd breeding problems, there are a large number of infective agents which cause genital infection in a high percentage of females in a herd when there is present some common factor adversely affecting ovarian activity. We heartily disagree with those who say that the bacteriology of bovine infertility has been "played out"; in our opinion much remains to be done in this field. We want to know more about the rôle of viruses and rickettsiae.

Management, including the time allowed to elapse between calving and service, and also the amount of work

* Presented to the 68th Annual Meeting of the National Veterinary Medical Association, at Cardiff, on September 4th, 1950.

expected of the bull, has an important bearing on the breeding efficiency of the herd. It is to be hoped that Mr. Smith will deal more fully with this question of the time between calving and service. With regard to the overworking of bulls, there have been several reports, but we would wish to pay tribute especially to two contributions in a recent issue of *The Veterinary Record* by Messrs. Gould & Bennett. To those of us interested in the herd breeding problem their observations are of inestimable value. It must be appreciated that lowered fertility amongst females can lead to the over-use of bulls, and so to a vicious circle. For some years we have appreciated the value of resting from service infertile cows and heifers. In some cases perhaps this rest enables the female to throw off a mild infection or to acquire a tolerance to the infection. There may be other ways in which benefit is derived. It may well be that by resting infertile females we are affording a much needed rest to overworked bulls. For some considerable time we have stated that in our opinion much of the benefit derived from the old-fashioned iodine lavage treatment depended on the rest from service which was a part of that treatment. Most people will agree it was much easier to get a farmer to rest a treated cow.

Little is known about the relationship between feeding and conception rates. We are particularly interested in this aspect of the subject and have done some work on a very narrow front in this field. In connection with a nutritional disturbance we have referred to irregular heat periods following service. We wish to make it perfectly clear that this phenomenon occurs wherever factors lead to early termination of pregnancy and it is a fairly constant feature of *Vibrio foetus* infection.

In the paper there is no reference to over-feeding, which is popularly regarded as a cause of infertility. It is possible that, apart from interfering with coitus, over-feeding leads to deposition of fat in the walls of the ovarian bursae to a stage where there is interference with normal bursal activity and with the Fallopian tubes. On the other hand, it must be remembered that obesity and infertility quite frequently arise from some common cause such as endocrine disturbance.

On page 7, Table II, for reasons which have already been mentioned, the explanatory notes are not as full as they might be, but we hoped that readers would understand that A=Ayrshire, F=Friesian, etc. We also refer to " heavily " limed pastures, " occasionally " limed, and " never " limed. By heavily limed pastures we mean pastures which received more than 2 tons of ground carbonate of lime or its equivalent during the early part of 1949; and by heavily slagged pastures we mean pastures which had received more than 5 cwt. of basic slag per acre during the early part of 1949; by occasionally limed or occasionally slagged pastures we mean an application of a smaller amount of either lime or slag during early 1949, or the same or smaller amounts during the years 1945 to 1948; never limed or never slagged means that there had been no application during the previous five years. We would emphasise once again that this Table is included only because it tends to show the difference in breeding efficiency of herds belonging to progressive farmers as compared with the breeding efficiency of herds belonging to non-progressive farmers.

Turning to page 8 in reference to the herds mentioned, we would point out that these were taken at random from our records. We are aware that improvement in breeding efficiency can be expected in May, but owing to the mild winter and early spring these two herds had been out at grass for over two months prior to our visit, and there had been no improvement in the breeding records. In both herds the trouble had existed when the animals were out at grass the previous year, and in one herd it actually existed during the previous May, and as we say in the text we have had similar spectacular results at all times of the year.

On page 10 some will no doubt challenge our claim to be able to obtain information concerning the size and possible quality of the corpus luteum by rectal examination. By *ante-* and *post-mortem* examination we have satisfied ourselves that this is possible in many cases. When we refer to a cystic corpus luteum we are referring to the condition described by Hopkirk and not the lacuna which can be found in many corpora lutea.

To say the least, our observations have been interesting, but must be regarded as no more than pointers. We have proved nothing. If these observations in themselves are only of limited value, they may perhaps stimulate sufficient interest to enable further work on nutrition and reproduction to be undertaken. It seems possible that we have touched the perimeter of a complex involving vitamin D, calcium, phosphorus, potassium, iodine and some other trace elements. Certainly the calcium/phosphorus ratio is but one factor in this complex, and its importance is largely dependent on the phosphorus intake. I would like to explain further what is meant by that, but time is passing rapidly and I will postpone that explanation until I am replying to the discussion.

We would emphasise once again that we may well be dealing with factors which run parallel to those which we have just mentioned. Again, because of our incompetence, we have made no attempt to discuss the availability of minerals in various feeding stuffs.

For a complete unravelling of this problem it seems to us that a knowledge of geology is essential. We are told that when lecturing in Hygiene Dr. J. T. Edwards dealt at length with various geological formations, a sure sign that he at any rate appreciated the influence of soil conditions on animal health, and we at Frant are quite certain that Dr. Edwards could do much to assist in the elucidation of this most interesting problem.

We agree that the time is ripe for a meeting of interested veterinarians to try to decide what we know and what we do not know about bovine fertility. Before such a meeting we would urge that interested parties should pay attention to the available literature, and particularly to the reports of the New Zealand workers. We would refer particularly to the work of Hopkirk, whom we are happy to have with us to-day and whose helpful advice during the past 12 years we here and now acknowledge; we would also refer to the work of Webster and Motion and the more recent work of James.

Finally, the time is long overdue for some first-class fundamental research on reproduction in cattle. It is to be hoped that this work will be undertaken at the Veterinary School now that they have acquired University status, because, like many other people, we feel that it is at the Universities that such fundamental work should be undertaken. (Applause.)

Mr. Hignett's paper was as follows:—

Factors Influencing Herd Fertility in Cattle

The extent to which bovine infertility interferes with full production has long been recognised, as is illustrated in Table I, which summarises the findings in several surveys undertaken during the period 1928 to 1931 in Great Britain.

More recently, Phillips (1949), working in Wales, found that "failure to breed" accounted for the disappearance from the herd of 6·5 per cent. of the cows in the opening valuation—25 per cent. of the animals disposed of during the year.

There are, of course, losses in addition to those by actual disposal, but they have not been estimated with any accuracy. It is, however, worth noting that Phillips found an indication that winter milk production was associated with increased infertility, but no evidence that high-yielding cows were more commonly discarded as infertile.

Infertility in the bovine has attracted the attention of many investigators over a long period of years. Almost fifty years have elapsed since Hess stressed the importance of ovarian dysfunction and Albrechtsen postulated genital infection as the cause of most infertility in the bovine. Thirty years ago Pugh in this country was contributing materially to its study and solution and the work of W. L. Williams and of Folmer Nielsen must be fresh in our minds. Certainly tribute must be paid to the work of the Survey Committee of the N.V.M.A., and particularly to that of its energetic Chairman (Mr. Steele-Bodger), for reviving interest in and extending knowledge of infertility in this country in recent years.

Even so, a review of past writings cannot but leave the impression that infertility was regarded as a problem of the individual and rarely looked on as one which might properly be faced on a herd basis. It is appreciated that it is often presented to the practitioner as affecting individual animals, especially by the impatient owner of a herd in which there are a few cows of outstanding merit. The occurrence of infertility as a herd problem is clear from the inspection of the records of any cattle breeding centre. They show quite commonly that the semen of the same bull over a period of months can effect a conception rate of 90 per cent. in several herds, whereas in several others the figure may be even less than 20 per cent. In this contribution attention will be focused on infertility as a herd problem, in the belief that it must be investigated on this basis and that only by an understanding of the herd problem can true preventive medicine be practised in this field.

The definition of herd infertility is not easy, for different workers have expressed different ideas as to the level of fertility which should be accepted as normal. Wilson (1949) mentions a beef bull which within the year had 60 cows in calf from 61 matings and in very many herds, both beef and dairy in this country, about 90 per cent. of the cows and heifers become pregnant to the first service. Some, at least, of the artificial insemination centres have in their records a number of herds with a breeding efficiency of this order. Since there are herds with this high fertility rate, why should the goal be set at a lower level? However, the author (1949) defined as problem herds those in which more than one-third of the females in the herd are difficult to get in calf. Such a definition might well exclude many in which it might properly be considered that a herd problem exists, but it will serve our purpose. It is unfortunate that there are no reliable statistics by which the extent of herd infertility can be illustrated and its incidence to-day compared with that of past years. The examination of the records of cattle breeding centres may in future be a good method of checking movements in this field, but there is a volume of opinion, both professional and lay, that the number of herds in which the incidence of infertility is high has increased materially during the past ten years. Some maintain that it was never higher than it is to-day.

It is obvious that the herd problem can arise from deviation from the normal of the bull and/or an appreciable percentage of the females. In Diagram 1 an attempt has been made to illustrate the various factors which can give rise to a herd breeding problem.

Hereditary and nutritional factors, acting independently or together, are regarded as the keystone. While it does appear that hereditary factors alone are on occasion the unfavourable influence, there is little good evidence of the extent to which they operate in Britain. Hancock (1949) has determined that a genetical factor leads to sterility in British Friesian bulls of certain breeding. We have encountered certain cow families in various breeds in which there is a very high incidence of cystic ovaries. Although during the past seven years we have made careful observations on our own herd of Ayrshire cattle, all we can say is that we have distinguished families with excellent records

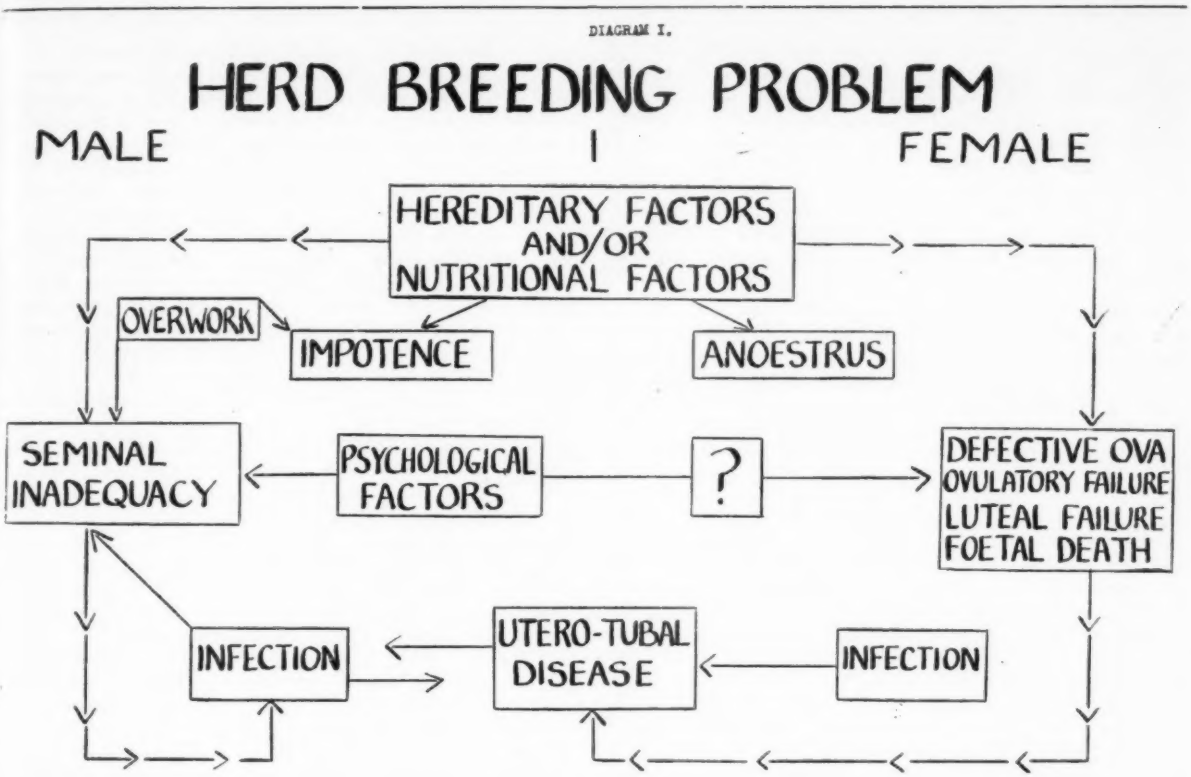
Table I

Causes of the Disposal of Dairy Cows *

Reason for disposal	Percentage of total disposals from herds						
	Hannah Dairy Research Institute, Ayr	National Institute for Research in Dairying, Reading		The School of Agriculture, Cambridge			Summary of all investigations
	1930	1929–30	1930–31	1928–29	1929–30	1930–31	
Diseases of the reproductive organs:							
(*a*) Sterility	17·2	26·2	25·6	23·7	26·7	26·2	23·8
(*b*) Abortion	2·1	3·1	2·8	3·6	3·8	2·7	3·0
Total reproductive disease ...	19·3	29·3	28·4	27·3	30·5	28·9	26·8

* Data adapted from: Report of Committee on Cattle Diseases: Economic Advisory Council: Cmd. 4591. H.M.S.O. 1934.

DIAGRAM I.



from others whose production is poor. In some of the latter the incidence of cystic ovaries is high and this may result from the operation of an hereditary factor which disturbs the normal rhythm of anterior pituitary activity. In Sweden, Lagerlöf (1934, 1938) and Eriksson (1943) have described the occurrence of a type of infertility, characterised by testicular and ovarian hypoplasia, in the Swedish Highland Breed which is definitely of hereditary origin. Miller (1946) has expressed the view that a similar condition exists among British cattle. Overseas workers have certainly produced a mass of evidence which suggests that hereditary factors influencing fertility in cattle are of primary importance.

On quite wide clinical experience we have built the view that adverse hereditary influences often open the way to the full expression of nutritional disturbances. This is, of course, difficult to prove, but the possibility that these two factors can operate together must not be overlooked.

There is much less difficulty in accepting that nutrition plays an extremely important part in bovine infertility, for much has been reported on this point. Wright (1945), Phillips (1949), Wilson (*loc. cit*) have referred to the relationship between nutrition and breeding efficiency in general terms. On the other hand, Pugh (1922), the author (1940, 1941, 1949, 1950), and Smythe (1942) in this country and Theiler, Green and du Toit (1924, 1928), Eckles *et al.* (1926), Hart and Guilbert (1928, 1933), Theiler and Green (1932), Guilbert (1942), Lardy *et al.* (1942), Larsen *et al.* (1944), Branton *et al.* (1947) Muller-Lenhartz (1947), Reid *et al.* (1947), Lesbouyries (1948), and many others overseas have attempted to be more specific. We will return to the question of the influence of nutrition later in this paper.

On the left side of Diagram 1 we have expressed our view that the hereditary and nutritional factors, singly or collectively, can lead to impotence or seminal inadequacy in the male. Observations made at the Wellcome Veterinary Research Station have suggested that a seminal inadequacy predisposes to genital infection. On the other hand, genital infection, whether arising primarily or secondarily, will lead to seminal inadequacy. Certain psychological factors, as mentioned by the author (1949), can lead to seminal inadequacy. Usually, inadequacy from this cause is of such short duration that it is unlikely to be followed by genital infection, but over-use can lead to impotence and/or seminal inadequacy and then genital infection may follow.

In Diagram 1, on the right side, it is suggested that, in the female, hereditary and/or nutritional factors may lead to anoestrus. In the animal with functional ovaries these factors may result in ovulatory failure with possible development of an ovarian cyst, in the production of a defective ovum, or in the development of a poor quality corpus luteum which will regress early in pregnancy and lead to death of the foetus, as described by the author (*loc. cit.*).

It will be noticed that infection has not been given a very prominent place in the diagram. It would appear that cows and heifers suffering from ovarian dysfunction are particularly susceptible to genital infection. Naturally, a cow or heifer can acquire infection of the utero-tubal structures without a primary ovarian dysfunction. Utero-tubal infection, no matter from what cause it arises, can lead to transference of infection to the bull at the time of service. In the author's opinion (1949, 1950) it is probable that only a few organisms are capable, *per se*, of setting up a herd breeding problem in this country, although this rôle can certainly be ascribed to *Brucella abortus*, *Trichomonas foetus* and *Vibrio foetus*.

For many years *Brucella abortus* infection was the cause of serious infertility in many British herds; not only through

the resultant abortions, but by an associated retention of the foetal membranes and secondary genital infection. Today, thanks to the widespread use of Strain 19 vaccine, for which the Animal Health Division of the Ministry of Agriculture is deserving of the greatest praise, brucellosis and its sequelae are considerably reduced. Holt (1949) has recorded that, during the period 1946 to 1949, the incidence of recognisable abortions dropped from 9·1 per cent. to 1·1 per cent. of pregnancies resulting from insemination with semen from the Dartington Hall Cattle Breeding Centre.

Trichomoniasis has been responsible for very serious losses incurred by the dairy industry. All clinicians who have encountered outbreaks of this disease are conscious of the difficulties associated with diagnosis. The test evolved by Pierce (1949) and based on the presence of agglutinins in vaginal mucus is probably the best. Otherwise the clinician should rely on microscopical examination, soon after collection, of foetal fluids or stomach contents from an early abortion, or of vaginal material or sheath washings. If no foetus is available, the clinician should examine all cows thought to be nine to 16 weeks in calf. If trichomoniasis exists in the herd, it is probable that at least one animal in this group will be suffering from pyometra and vaginal material from such an animal is usually rich in trichomonads. Nothing less than a positive reaction to the vaginal agglutination test or the demonstration of motile trichomonads should be accepted as the criterion of the existence of trichomoniasis in the herd. Fortunately the control of this disease is now largely at hand, by the practice of artificial insemination.

Vibrio foetus infection in cattle has been known for very many years. Theobald Smith (1918) drew attention to the importance of this organism and reported that 23·8 per cent. of 109 aborted foetuses from a large herd revealed *Vibrio foetus*. Plastridge *et al.* (1943, 1947) in U.S.A. studied 10 *Vibrio foetus* infected herds and noted a lowered conception rate in five herds. Sjollema, Stegenga and Terpstra (1949) have drawn attention to the serious cattle breeding problem in Holland associated with *Vibrio foetus* infection. The present position has been reviewed by Stableforth (1950). Several herds from which this organism has been recovered and which we have had under observation for periods up to seven years have had variable conception rates; none really poor, but all leaving much to be desired. This is probably due to the fact that the *Vibrio foetus* infection has been present in these herds for some considerable time, because like others who have had the opportunity to determine the effect of this infection from early in its appearance, we have been impressed with the disastrous level of infertility, in served heifers and in cows, which it may cause during the first year of its presence in the herd. Here again, diagnosis is extremely difficult. The organism is difficult to isolate and the blood agglutination test is unsatisfactory. Sjollema *et al. (loc. cit.)* have shown that agglutinins for *Vibrio foetus* are present in the vaginal mucus of a high percentage of affected animals, but not in normal animals. According to these workers, control of this disease depends upon preventing the spread of infection by prohibiting the mating of the healthy with the infected. Infected cows appear to develop a tolerance and breed normally after being withheld from service for three months; they may still be infective and should be mated only by artificial insemination. The Dutch workers report that intra-uterine injections are of no value in the treatment of this disease. Tribute should be paid to the work of Lawson, who has done much to emphasise the widespread occurrence of this infection amongst cattle in this country.

In contrast to the small number of specific infections we have mentioned, there are a very large number of organisms capable of causing a high incidence of genital infection in a herd where some primary factor renders these animals susceptible to infection. Infective agents, capable of causing this secondary genital infection, include streptococci, staphylococci, corynebacteria, coliform organisms, pseudomonas and the pleuropneumonia-like organisms. Of these, the corynebacteria and the pleuropneumonia-like organisms are probably the most troublesome because genital infection with these organisms frequently involves the ovarian bursae. The pleuropneumonia-like organisms, first recovered from the bovine genital tract by Edward, Hancock and Hignett (1947), unless stored at −70° C., remain viable for a very short time outside the animal body. This, together with the very special technique required for their isolation and typing, renders difficult a definite diagnosis.

We have always given a prominent place to the influence of the anterior pituitary gland as the all-important organ in determining reproductive efficiency. Any dysfunction of this ductless gland can interfere seriously with the activity of the gonads in both male and female. It is possible that anoestrus and suboestrus both result from the effect of certain factors influencing the anterior pituitary. What these factors are it is difficult to say, but most clinicians would agree that climate, nutrition and heredity, separately or combined, play a part. Anoestrus and suboestrus can affect the breeding programme seriously. Wright (*loc. cit.*) expressed the view that the absence of detectable heat in non-pregnant animals is the commonest breeding problem in cattle. It is accepted that cystic ovaries in cows result from anterior pituitary dysfunction. We suggest that the resulting follicle-stimulating/luteinising hormone imbalance can arise from nutritional disturbance.

In Diagram 2 we attempt to illustrate the various nutritional factors which possibly influence reproduction and we attempt to show how one nutritional factor is dependent on another and how certain of these factors are influenced by soil and climatic conditions.

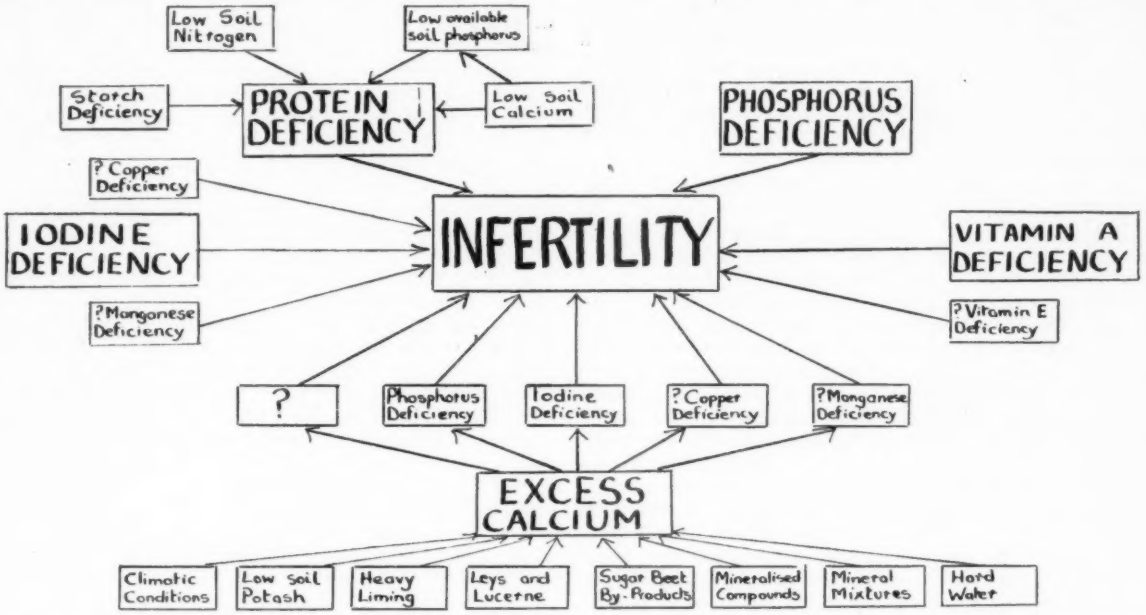
It is our intention to deal largely with nutrition, and particularly with certain aspects of nutrition, and their effect on reproduction in cattle. However, space does not permit the whole of this wide field to be dealt with in an adequate fashion. We must almost ignore the effects of gross malnutrition or of a grossly deficient ration which make themselves evident more generally than by their effect on fertility.

Carbohydrate, fat and protein we must leave with the remark that, despite much study, there is little evidence that the quantity fed, *provided it is generally adequate*, is of much significance in the field under review. Good general nutrition is a prerequisite of high breeding efficiency, but what may appear to be good in general terms may not be satisfactory for normal reproduction, possibly in that the anterior pituitary is one of the first organs to respond to the lack of sufficient intake and utilisation of a particular nutritional factor.

Obviously there is an intricate association between the utilisation of the various food substances; even in their provision by pastures and crops. For example, in Diagram 2 the effect of low soil calcium is set out—it leads to a locking-up of soil phosphate as ferric phosphate which is not available to the plant, to the discouragement of legumes which are rich in protein and, in general, to grazing which is poor in both quantity and quality. Similarly low

DIAGRAM II.

RELATIONSHIP OF NUTRITION TO THE HERD BREEDING PROBLEM



soil nitrogen produces herbage low in protein and scant in quantity.

Some have stressed the importance of vitamins and, while we are ready to concede that gross deficiencies interfere with fertility, we feel that much more information is needed before their role, in the production of infertility in a herd managed along reasonable lines, is clear. It is accepted that vitamin A deficiency can lead to impaired fertility, even sterility, in both the male and the female. The vitamins B and C do not appear to require consideration since cattle are capable of synthesising them. Vitamin D need have little consideration, although one must bear in mind the possibility that the feeding of silage to the exclusion of hay may lead to a deficiency and that this vitamin plays an important part in the utilisation of calcium and phosphorus. Vitamin E has long been associated with implantation of the fertilised ovum. On theoretical grounds it is hard to credit that a deficiency of this vitamin occurs naturally in herbivorous animals, yet there are practitioners who can claim benefit from the injection of substances rich in this vitamin. We have encountered an interesting condition in bulls which appears to arise from the overfeeding of cod-liver oil, which does interfere with the absorption of vitamin E. The most obvious clinical feature was abnormal movement of the hind limbs, through dystrophic changes in the adductor muscles causing a tendency to spreading, particularly when walking on a hard surface. These changes may even interfere with service. A dramatic improvement follows the withdrawal of cod liver oil from the ration.

Much more attention must be given to deficiencies in trace elements. Argument still ranges around the rôle which manganese plays and there seems no occasion to add to the confusion by a review of the position here. Cobalt and zinc may have a place, but its definition is still awaited. In recent years we have collected some evidence that the rôle of copper is worthy of further investigation. Work by Allcroft and Parker (1949) indicates that blood-copper levels are of limited value in assessing the copper status of cattle; a better indication is obtained by determining liver-copper values. The necessary specimens can be obtained by liver biopsy. We are rapidly coming to the conclusion that iodine has an important effect on the reproductive mechanism. Unfortunately little experimental evidence is available. It is known that in women hypothyroidism frequently leads to abortion. Pugh (1922, 1924) has drawn attention to nymphomaniasis in cows associated with abnormal thyroid function. There have been reports of infertility in cattle in iodine deficient areas of Norway. Spielman, Petersen and Fitch (1943) performed thyroidectomy on five female cattle and on one bull. Subsequently, in the sexually mature cattle there was an absence of visible oestrus and male libido. Ovulation and sperm production continued for some 453 days after removal of the thyroids. Thyroid therapy led to normal oestral behaviour in the female and normal breeding behaviour in the male. Thyroidectomy, either before conception or during pregnancy, had no detrimental effect on gestation or parturition. Three normal calves were born from completely thyroidectomised dams. It is possible that where large quantities of kale are fed the goitrogenic substance known to be present in the brassica family, increases the call for iodine. We have had reason to suspect an iodine deficiency in a number of herds, usually of the Channel Island breeds. A notable feature is that in such herds intra-uterine injections of iodine solution are sometimes followed by an immediate, if only temporary, increase in milk yield of the treated animals. In these herds there is a tendency for the birth of dead or weakly calves. In several instances bull calves have been born alive whilst heifer calves have been born dead. Sometimes there is a high incidence of retained foetal membranes. Although it is generally assumed that an iodine deficiency adversely

affects the later stages of pregnancy, it is our experience that an iodine deficiency can interfere with the establishment of pregnancy. It is possible that the degree of the deficiency determines at what stage of pregnancy the adverse effects are manifest. Our experience indicates that an iodine deficiency should be suspected when there is a history that heifers bred on the place are more difficult to get in calf than those which have recently come on to the farm, or where animals brought on to the farm as down-calvers are successfully mated after the first parturition, but subsequently prove to be shy breeders.

We pass now to a consideration of the rôle of the major mineral elements, calcium and phosphorus. There is no good evidence that an absolute deficiency of calcium influences fertility. On the other hand, many workers, notably Eckles, Becker and Palmer (1926), Theiler, Green and du Toit (*loc. cit.*), and Theiler and Green (*loc. cit.*) have observed reduced breeding efficiency associated with low phosphorus intake. One is ready to admit that these states of aphosphorosis occurred among range cattle where low protein intake and other factors were also at work. Yet, the feeding of phosphorus supplements under these conditions has been shown to have a markedly favourable effect on the fertility of the herd. Theiler and his co-workers noted that the calf crop in a group of cows receiving a phosphorus supplement was 80 per cent., whilst in a control group it was only 51 per cent. In an experiment which lasted three years, du Toit and Bisschop (1929) recorded that 66·1 per cent. of 109 cows fed bonemeal produced three calves, whereas not one of the 20 controls which survived the period of observation produced three calves; there was a calf crop of 87·3 per cent. among the former, of only 56·5 per cent. in the latter. More recently Sheehy (1946) and O'Moore (1950) have drawn attention to the occurrence of aphosphorosis in cattle in Eire and both mention that infertility is associated with the condition. Dunlop (1947) reported a marked improvement in reproductive efficiency in cattle on hill grazings in Scotland when the cattle received a mineral supplement rich in phosphate and in trace elements. Earlier workers have held the view that infertility as a result of phosphorus deficiency occurs only when animals show other clinical symptoms of aphosphorosis. On the other hand, we consider that breeding efficiency can be impaired without other obvious signs of a phosphorus deficiency.

It is unfortunate that interest in calcium-phosphorus metabolism has been unfashionable during the last 15 years, attention having been focused more on those exciting fields which cover the influence of vitamins and trace elements in relation to nutrition. Through the good offices of Dr. C. M. Hopkirk, we recently have had placed in our hands a full report of work by Webster covering his observations on the breeding efficiency of some 2,800 cows in 42 herds, mostly over two breeding seasons (1929 and 1930), in a district of New Zealand. Carefully determining the calcium and phosphorus content of the pasture herbage consumed by these cows during the breeding season, Webster concluded that a relationship did exist between the calcium and phosphorus content of their food, and an even closer one between the CaO : P_2O_5 ratio, and breeding efficiency. These observations are similar to those which we have made and have encouraged us to continue work along these lines. Webster noted that in those herds in which the CaO : P_2O_5 ratio was narrow and the P_2O_5 intake high, breeding efficiency was of a significantly higher standard than in those in which the ratio was wide and the phosphorus intake low. In the former there was no tendency for increased infertility amongst high producing animals, but in the latter there was a definite tendency for the higher producing cows to suffer from temporary infertility.

Those who have been engaged in bovine infertility work in Britain for the past 15 years have seen a great change in the picture of herd infertility. In the earlier part of that period practically every herd-breeding problem was associated with gross pathological changes in the female genitalia, changes commonly secondary to brucellosis or trichomoniasis. With the control of the former by vaccination and of the latter through a better understanding of the disease, some thought this problem would largely disappear. However, since just before the war herd infertility has been more and more frequently the cause of anxiety in herds free from these two major diseases. The type of trouble has changed to one in which ovarian dysfunction is common. The clinical picture in this type of herd infertility suggests a luteal deficiency. The incidence of cases of cystic ovaries is generally well above the average. Females not so affected come into season quite normally at intervals of three weeks until served. Thereafter, in the absence of established pregnancy, they return at an abnormal time, 4, 5, 7 or 8 weeks, etc., after service. Detailed observations in a large number of herds, in which this type of infertility has been the problem, have demonstrated clearly that in the great majority of the females pregnancy does occur, but that the foetus is aborted or resorbed at a very early stage. We think this due to the development of a corpus luteum (frequently cystic) of poor quality, which has a marked tendency to regress early in pregnancy. In these herds there are cows which apparently do not become pregnant and continue, for some time at least, to return to service every three weeks, and some in which a satisfactory pregnancy is established without difficulty. There is no evidence that an infectious agent is at work and quite early we noted a connection between this type of herd problem and the grazing of pastures which had been heavily slagged and/or limed. In the earlier days the breeding records of these herds were far better during winter than during spring and summer. This reversal of the usual state of affairs seemed to be related to the fact that phosphorus-rich imported feeding-stuffs were still in ample supply and their withdrawal when grass on the limed pastures was young and plentiful appeared to be a factor of importance. In later years, when the supply of imported feeding-stuffs was very greatly reduced, this seasonal feature was not so prominent and the incidence of herd infertility associated with ovarian dysfunction became more and more pronounced at almost all seasons of the year.

Our employment affords us the opportunity to consult with practitioners in many parts of the country and during the past ten years we have faced a herd infertility problem characterised by ovarian dysfunction in a large number of herds. During this period we have been forced into the belief that in many instances the principal causal factor was nutritional. While we have endeavoured to keep an open mind, we have been impressed by the probability that one link lies in the mineral status of the food intake and, perhaps particularly, in the relative intake and utilisation of calcium and phosphorus.

Certainly one of the great changes in the nutrition of our dairy cows is that related to these major mineral elements, and it appears to coincide with the incidence of the type of herd infertility we have in mind. Starting in 1938, the amount of lime applied to our pastures has increased enormously. It has not been evenly distributed from farm to farm, and some have overlimed by applying quantities far in excess of those laid down by official recom-

mendations. We have all met the farmer who in recent years, encouraged by the liming contractor, has doubled up on the recommended amount per acre. This liming has increased herbage calcium, partly by raising the lime content of the existing flora, but to a greater extent by increasing the proportion of lime-catching plants. In addition, for many weeks after some pastures are limed the cattle consume large quantities of chalk. Quite rightly, ley farming has been greatly extended. We lime and encourage the legumes which are rich in calcium compared to phosphorus; we introduce ryegrass in our seeds mixtures and much ryegrass has a fairly high calcium content. The lucerne acreage has extended to produce those valuable, but calcium-rich, home-grown foods—lucerne hay, lucerne silage and lucerne dried—without which our record milk production would not be possible. We dry grass—young grass from heavily limed and fertilised legume-rich leys. The calcium content of much of the dried grass of to-day is considerably above that of pre-war. We have increased our acreage of sugar beet; tops (fresh or as silage) and dried sugar beet pulp are valuable cattle foods, but possessed of a wide calcium-phosphorus ratio. Many dairy farmers are mineral conscious and, having money to spend on what they consider good practice, feed or offer mineral supplements. There are some well-balanced mineral mixtures on the market, but many more which contain a very high percentage of chalk. We understand that calcium carbonate is an essential constituent of our national compound dairy cake. Thus, in our view, the position has changed since pre-war days—the intake of calcium in the nutrition of our cows has increased markedly.

But what of the phosphorus intake? Gone are the days when phosphorus-rich oilseed cake was an important item in the feeding of our dairy stock. The lower phosphorus intake of farm stock has reduced the phosphate content of our farmyard manure and this has created a vicious circle by reducing herbage-phosphorus levels. Phosphates for pasture fertilisation were restricted and during the war no potash was available for crops other than sugar beet and potatoes. As the high calcium content of our roughage rose, little additional phosphorus-rich food was available with which to balance up, and on some farms the position was aggravated by the calcium hardness of the water.

It is interesting to note that climatic conditions play an extremely important part in determining the relative calcium and phosphorus content of herbage. Eckles and his co-workers (*loc. cit.*) showed that during a period of high rainfall herbage phosphorus rises. During a period of low rainfall the reverse process occurs. Can we link this with the increased incidence of herd infertility which follows a dry spring and summer?

Appreciating that a type of herd infertility had become prevalent while these nutritional changes were being effected we have for some time attempted to determine if the relationship is as real as it is apparent.

In our first survey, which covered 40 herds, we noted the relationship between the various nutritional states and the fertility of the herds. Starch intake and protein intake did not appear to have any marked relationship with breeding efficiency, but the intake of the major mineral elements, and perhaps particularly the calcium-phosphorus ratio, seemed significant. Very generally, where there was a high intake of calcium and a low intake of phosphorus the breeding record of the herd was poor. Where the quantities were sufficient when viewed separately, the ratio appeared to bear some relationship to the conception rate. In the vast majority of cases where there was a wide ratio due to excess of calcium there was herd infertility. In a very few herds the imbalance was due to the feeding of phosphorus in excess and there, too, fertility was seriously impaired.

In another survey we concentrated on herds which were deriving most of their food from pastures, in an attempt to determine whether the type of pasture and its management did influence breeding efficiency. In this work we had the co-operation and whole-hearted support of Mr. J. A. O'Neil and his staff at the Frant/Whiligh Cattle Breeding Centre. We selected the herds which had a conception rate of 80 per cent. or over, based on first inseminations, and others in which the rate was 20 per cent. or less. The type of pasture which these herds grazed and its management were determined and the findings are set

TABLE II

HERDS WITH CONCEPTION RATES UNDER 20% AND OVER 80% INSEMINATED WITH SEMEN FROM FRANT/WHILIGH CENTRE DURING PERIOD 1.4.49 TO 30.6.49

Conception rate	No. of herds	Average size of herd	Semen used (percentage)							Pasture grazed (%)			Pasture limed (%)			Pasture slagged (%)			% of herds vaccinated with S.19
			A	F	G	J	S	C.I. mixed	Mixed	P.	L.	B.	H.	O.	N.	H.	O.	N.	
20% or under	21	14	0 (1·5)	0 (4·5)	38·1 (43·6)	9·5 (7·5)	19·0 (42·8)	23·8	9·5	28·6	9·5	61·9	42·9	47·6	9·5	42·9	33·3	23·8	57·1
80% or over	25	15	0 (4·9)	4·0 (17·6)	12·0 (9·9)	0 (2·1)	72·0 (64·0)	4·0	8·0 (1·4)*	76·0	0	24·0	8·0	44·0	48·0	8·0	32·0	60·0	24·0

N.B. Figures in parentheses indicate percentages of actual cows inseminated with semen from bulls of each individual breed.
* Two cows inseminated with Red Poll semen.

Abbreviations used:

Pasture grazed—
P = Permanent.
L = Leys.
B = Both.

Pasture limed or slagged—
H = Heavily.
O = Occasionally.
N = Never.

C.I. mixed—
= Herd containing two or more breeds some of which were Channel Island cattle.

Mixed—
= Herd containing two or more breeds none of which were Channel Island cattle. Also herds using beef inseminations.

out in Table II. There appears to be a clear relationship between heavily limed, well managed pastures and the occurrence of a low conception rate. Seemingly the non-progressive farmer has the more fertile herd. The profession will not wish to discourage the progressive farmer, who by increased production is pulling his weight; it will determine to find the reason for this apparent lack of fertility in herds kept on well-managed pastures and to see the corrective applied.

Our next survey was confined to the period October 1st, 1949, to March 31st, 1950, a season when the nutrition of the dairy cow depends very largely on the food she is offered and when, therefore, one can collect exact information on the food intake. It covered 46 herds scattered over the country and the number of cows concerned was 926. Herds of the following breeds were included: Ayrshire, British Friesian, Guernsey, Jersey, Red Poll, Shorthorn and South Devon. Careful records of feeding and of service dates were kept. The feeding-stuffs were analysed for calcium and phosphorus content and this involved the analysis of some 600 samples. All the information it is hoped to obtain as the result of this survey is not yet available, but the data already to hand suggests that the calcium intake has some bearing on breeding efficiency and that the phosphorus intake combined with the calcium-phosphorus ratio of the ration influences fertility. It would certainly appear that when the ratio departed materially from that of 1 : 1 and the phosphorus intake was low, breeding efficiency was impaired.

We think it will be generally agreed that these observations, limited as they are, all tend to support the suggestion that the breeding efficiency of cattle may be related to the calcium-phosphorus ratio of the food consumed, always assuming that the amount of each element is sufficient in itself. We do have supporting evidence, of similar quality to that quoted above, in our field experience of attempts to correct herd infertility by narrowing the calcium-phosphorus ratio. Almost invariably, where we have suspected that this type of nutritional imbalance was the cause, a spectacular improvement in breeding efficiency has followed a narrowing of the ratio.

As examples, we can mention two herds which are typical of a number we have seen at different times of the year. Herd No. 13 consisted of 50 pedigree Shorthorns, which, prior to our first visit in April, 1949, had a conception rate of less than 30 per cent., based on first services, during the previous 12 months. Females had been mated by both natural service and artificial insemination during that period. Investigation failed to unearth any factor which could account for the breeding problem, apart from the possibility of this being due to the wide $CaO : P_2O_5$ ratio (3:1) which the females had been receiving for practically the whole of the preceding year. The clinical findings supported the suggestion that this herd breeding problem was due to the calcium-phosphorus imbalance. We decided to narrow the calcium-phosphorus ratio by withdrawing the calcium-rich proprietary mineral mixture which was being fed and by including 10 per cent. of fishmeal in the concentrate ration. From the time of this change until now, a period of well over 12 months, the conception rate has been over 70 per cent.

Herd No. 27 was one of 31 pedigree Guernseys which was visited in April, 1949. Artificial insemination had been employed, but the conception rate for the past nine to ten months had remained below 25 per cent. So far as could be ascertained the only factor which could have a bearing on the breeding problem was the wide calcium-phosphorus ratio of the ration which these animals had been receiving during the time that the problem had existed. The calcium-phosphorus ratio was narrowed by withdrawing from the concentrate ration the proprietary mineral mixture, which consisted largely of chalk, and by ensuring that cows and heifers grazed only old pasture until they were definitely in calf. Again, there was an immediate and spectacular improvement in the conception rate which has now been subsequently maintained.

We hope that none will think we contend that we have proved a relationship between the major mineral element status of the herd and its fertility. Much remains to be done and the testing of the hypothesis under experimental conditions seems a crying need. We can report only two small experimental observations. Quite conscious of the possible fallacies in any attempt to relate feeding experiments using laboratory animals to conditions among farm stock, we planned and completed a small observation using guinea-pigs. Two groups, each of six pairs of unbred guinea-pigs, were fed the same ration, except that for one group the calcium-phosphorus ratio was widened by the addition of chalk; No. 1 Group received a ration with a ratio of 1·5 : 1 and No. 2 Group received a ration with a ratio of 3·0 : 1. Each group has produced four series of litters. Table III summarises the breeding efficiency of each group.

TABLE III

POSSIBLE EFFECT OF $CaO : P_2O_5$ RATIO ON BREEDING EFFICIENCY OF GUINEA-PIGS

(Each group originally consisted of six pairs of guinea-pigs)

$CaO : P_2O_5$ ratio of ration	Group 1			Group 2*		
	1·5 : 1			3·0 : 1		
	No. of litters	Total young	Average litter size	No. of litters	Total young	Average litter size
First litters ...	5	15	3·0	6	19	3·1
Second litters	6	22	3·7	4	9	2·3
Third litters	6	29	4·8	4	8	2·0
Fourth litters	4	20	5·0	4	13	3·2
Total :	21	86	4·1	18	49	2·7

* One male and two females have died since the start of the experiment.

It will be seen that Group 2 produced on an average fewer young per litter than did Group 1. It was noticed that the pigs in Group 1 consumed considerably more food than did those in Group 2. It is extremely difficult to assess the extent to which this difference was due to the added calcium reducing the palatability of the ration received by Group 2 and how far it was due to the larger litters in Group 1. It is possible that the reduced palatability of the ration received by Group 2, lowering the food intake, was responsible for the inferior breeding efficiency of this group. In a small trial experiment we supplemented the ration of six cows with 6 oz. of calcium carbonate per day, while six others, with a similar breeding record, acted as controls. All the six control cows held to the first service, whereas only three of those fed additional calcium were got in calf to that service.

All our observations over the past ten years support the view that in herds affected with the type of infertility we have described earlier, the nutritional status of the females in respect of the major mineral elements is, at the

very least, an important factor. A calcium-phosphorus ($CaO : P_2O_5$) ratio of 1 : 1 appears, on present information, to be near the ideal for high fertility, provided the actual intake of phosphorus is sufficient. Where this ratio, as so commonly happens under present-day conditions, widens to 2 : 1 or more and the phosphorus intake is only slightly in excess of minimum requirements, the risk of this type of herd infertility is great; where, as rarely happens, the amount of phosphorus markedly exceeds that of the calcium in the diet, similar difficulties may arise.

We would emphasise that there are types of infertility not primarily associated with infection, which differ from that we have dealt with and which do create a herd problem. For example, in some herds there is a high incidence of dystokia due to uterine inertia, of retained foetal membranes and of *post-partum* genital infection and poor mammary development, particularly in heifers, at the time of calving. All this suggests that the oestrogen level at parturition is low. While we feel that a nutritional factor is at work, we can only say that some of our observations suggest that an iodine deficiency is associated with this type of problem. However, it would appear that the more common syndrome is the one we have associated with the major mineral element nutritional state.

It is commonly said that from the point of view of quality breeding the bull is half the herd. From the angle of herd fertility he may be *the* cause of the breeding problem, responsible to a variable extent or not incriminated. Space prevents our discussing all the conditions which may lead to a herd breeding problem for which the bull is responsible. We hope to publish a series of observations which have been made at the Wellcome Veterinary Research Station to demonstrate the effect of nutrition on the fertility of the bull. We ask your indulgence for presenting only an outline of our findings in this paper. We encountered all the usual difficulties in adjusting the constituents of rations to make changes which would affect only one of the major nutritional elements. Even so, it did appear that starch intake tended to influence semen quality to a greater extent than did protein, that an increase in the calcium intake could depress semen quality as could a widening of the calcium-phosphorus ratio. Reduction of the calcium intake and narrowing of the ratio could be followed by improvement in quality.

It was obvious that certain bulls were particularly susceptible to changes in the calcium intake and in the ratio. Bulls kept on a ration with a wide ratio providing just enough phosphorus for maintenance became very susceptible to changes in the ratio and those used very heavily were likewise rendered susceptible. It appeared that a young bull kept for a prolonged period on a high-calcium/low-phosphorus ratio suffered an irreversible testicular degeneration leading to sterility.

It is interesting to record our observation that in both the male and the female there is a breed susceptibility to the effect of mineral imbalance on fertility. The Guernsey has its fertility most easily impaired; the Jersey is next most susceptible and is probably followed by the Hereford. At the other end of the scale are the Red Poll, the Shorthorn and the Friesian, the last-mentioned probably able to tolerate a wider calcium-phosphorus ratio than any other breed. It is not uncommon to find on one farm a Channel Island herd and a Friesian or Shorthorn herd fed much the same ration. On several such farms we have encountered a herd breeding problem apparently associated with the feeding of a ration wide in calcium-phosphorus ratio confined to the Channel Island cattle.

We have stated our belief—but do not pretend to have proved—that faulty nutrition associated with calcium-phosphorus imbalance is the cause of at least one type of impaired herd-breeding efficiency. We may be excused theorising as to the mechanism. Possibly it is not the calcium and phosphorus intake and ratio which are the influences, but some factor which generally runs parallel with them. True it is that wide $CaO : P_2O_5$ ratios, anything between 4 : 1 and 1 : 4, have been accepted as compatible with health in cattle, but the earlier workers accepted satisfactory growth rate in bullocks as their criterion. We contend that to avoid at least one type of herd infertility the ratio should not move far from 1 : 1, with a sufficient intake of phosphorus. In view of the observations of Meigs *et al.* (1926) and because so many of our dairy cows have now to live and produce on a ration with a phosphorus intake little above the minimum requirement, one is entitled to assume that a high intake of calcium will lead to a conditioned phosphorus deficiency—not to a fall in blood phosphorus but to a negative phosphorus balance, especially associated with times of high production (of a calf and then of milk), when we attempt to get our cows in calf. In this condition of negative balance, phosphorus is drawn from the tissues and it may be inferred that this interferes with the production and balance of the gonadotrophic hormones. On the other hand, it may be that the excessive intake of calcium interferes with the absorption and utilisation of certain trace elements, cobalt, copper, iodine, manganese, etc. It would seem likely, therefore, that the important factors are the actual intakes of calcium, phosphorus, iodine and perhaps copper, manganese, and other trace elements. It is possible that a high calcium intake interferes with the synthesis, utilisation or function of factors not considered in this paper and that the prolonged feeding of a ration containing a marked excess of calcium may lead to permanent sterility probably due to degenerative changes in the anterior pituitary.

The possible rôle of the oestrogen-like substances in pasture herbage as contributory factors in the herd-breeding problem must not be overlooked. As yet, however, there is no good evidence to show that these substances have any adverse effect on breeding efficiency of cattle in this country.

It should be borne in mind that many deficiency diseases—natural and conditioned—and other nutritional disturbances will influence reproduction; not through any specific effect on the reproductive system, but due to their effect on general metabolism. This does not alter the fact that they can lead to impaired breeding efficiency and must be considered in this light by the clinician. This applies even to reduced palatability resulting in lowered food intake. At this stage of our knowledge it is foolish, to say the least, to consider only those factors which directly influence reproduction. It has rightly been said that in many flocks and herds the response of the animals is the best criterion as to whether additional minerals are required. As has happened so often in the past, the research worker will follow in the wake of the clinician and it may be a very long time before he has completely unravelled the relationship between nutrition and reproduction.

We regard the investigation of the herd-breeding problem as one of the most satisfactory and exciting undertakings in the whole of the veterinary field; if the problem is tackled in a systematic manner so very much can be achieved. Before visiting the problem herd the clinician should obtain detailed records for perusal. Apart from the calving and

service dates for each individual female, the dates of service for each bull should be arranged in chronological order. The study of these records will indicate the interval at which animals are returning to service and may throw light on whether the trouble is likely to be associated with infertility in one or more of the bulls or whether the females are at fault. In addition, the time allowed to elapse between calving and service can be noted. The clinician should, where possible, look at the pedigrees of the affected females to see if they are related, since the possibility of the infertility being associated with some genetical factor must not be overlooked. When the problem is studied on the farm he should, as far as possible, first satisfy himself that the bulls are of normal fertility. Having done this, he should endeavour to eliminate infective agents as primary factors responsible for the problem. The clinician should then consider the possibility of one or more of the various deficiency diseases being at the root of the trouble. Finally, he should look for some nutritional disturbance resulting from imbalance of certain elements.

He must not jump to conclusions. We know from bitter experience that it is very easy to confuse trichomoniasis or *V. foetus* infection with some nutritional disturbance. Improvement in conception rates following a change in ration might merely be due to the infected animals acquiring a tolerance. It is equally easy to mistake a nutritional problem for one of infection. The possibility of more than one primary factor being involved should not be overlooked.

The amount of work can be considerably reduced by carefully selecting the females to be examined. We choose for this purpose up to three animals which were in oestrus 48 to 96 hours previously, up to three which were in oestrus eight to 16 days previously and up to three which were served 18 to 22 days previously. In addition, we examine all females thought to be nine to 16 weeks in calf. The examination of these groups provides useful information about the luteal status, whilst special attention is paid to the last group if trichomoniasis is suspected. This is a field in which great reliance must be placed on clinical observation. For example, the difficulty of demonstrating the presence of *V. foetus* when an aborted foetus is not available means that the clinician by careful perusal of the records, by study of selected animals and by carefully sifting other available evidence, must himself differentiate between primary infection and nutritional disturbance.

Whilst rigid adherence to the scheme outlined will lead to the solution of many herd breeding problems, it must be admitted that some will still fall into the category "Of Unknown Cause." The author desires to emphasise this point and does not wish to appear to over-simplify the problem, which is likely to become more complicated the more we learn about it. Whilst an attempt has been made to incriminate certain specific nutritional factors, it must be appreciated that a herd-breeding problem often results from several influences.

Where the type of herd infertility described is associated with a high calcium intake or a calcium-phosphorus imbalance, a spectacular improvement in breeding efficiency usually occurs very rapidly following a narrowing of the ratio, always providing the wide ratio has not been fed for too long a period and that secondary bacterial infection has not led to permanent damage. In the case of the bull a marked improvement in semen quality can occur within one week.

The ratio can be narrowed by adjusting the concentrate ration, by withdrawing mineral mixtures containing much calcium and little phosphorus, by feeding bonemeal, fishmeal, or sodium acid phosphate and by discrimination in the use of roughage and grazings. As a short-term policy luteinising hormone can be administered intravenously at the time of service and repeated at ten days and then every three weeks, until the cow or heifer is safely in calf. Another good line of treatment is implantation with progesterone, after service and when the clinician is satisfied that a corpus luteum has developed.

As a long-term measure there should be special attention to pastures and to crops used for hay, dried grass or silage making. Particular attention should be paid tc dressing with lime, phosphate and potash. On no account should pastures receive more lime than is recommended by the soil chemist and in no one year should the application exceed 2 tons of ground carbonate of lime or its equivalent per acre.

If clinical observations suggest a copper deficiency in the herd, copper sulphate should be administered at the rate of 1 gm. per day. A copper sulphate solution placed on the concentrate ration can be used for this purpose or the copper can be provided in a mineral mixture.

Potassium iodide, at the rate of not less than 120 mgm. per animal per day, should be given to bulls, cows and heifers in any herd where an iodine deficiency—absolute or conditioned—is suspected.

In those brucella-free herds where there is a high incidence of retained foetal membranes we have had excellent results with the parenteral administration of stilboestrol dipropionate before parturition. A dose of approximately 15 mgm. should be given during the last four days of pregnancy. If a cow, following injection, does not calve within four days the injection should be repeated.

We are very conscious of the flaws in our observations, but put them forward in the hope that they will stimulate interest in this important subject. Even if our deductions are at fault they will not be worthless, providing they are responsible for further work on the influence of nutrition on reproduction. It might well be argued, in fact it certainly will be argued, that we clinicians should not have tackled the nutritional aspect of the herd-breeding problem: that, in any case, this is the type of investigation requiring a whole team of workers who are specialists in their own particular field. With this, we are in complete agreement. Because of our interest in agriculture on the one hand and veterinary gynaecology on the other, it is only natural that we should be particularly interested in the relationship between nutrition and reproduction. For a number of years we have pressed, quite unsuccessfully, for support for the idea of a team investigation of this subject. As a last resort we at the Wellcome Veterinary Research Station have had to tackle the problem ourselves, pleased to accept whatever outside help has been forthcoming. A number of workers in other laboratories have given us a great deal of assistance in actual chemical analysis of feeding-stuffs.

Perhaps now a well-organised team will undertake the work of trying to correlate nutrition and reproduction. It is to be hoped that such a team will pay attention to the effect of the actual rearing of young stock on the subsequent fertility of such animals. Our experience has convinced us that the veterinarian with his clinical background must play a major part in any such research project. Two of the major problems, apart from finding the right people to form the team, are those of the cost of this type of work and the difficulty of keeping controls in field observations. For the elucidation of this most interesting subject it will be essential eventually to use identical twins and hypophysectomised cattle.

We are primarily interested in the herd infertility problem and, at this stage, are not prepared to assess the relative importance of primary infective agents, of genetical factors and nutrition in the contribution they make to this problem.

We appreciate that our suggestions may be dangerous if clinicians attach to them more importance than we are prepared to give them. Once again it must be stressed that there are many factors influencing bovine infertility which are quite independent of calcium and phosphorus, and even of any nutritional factor. We suggest that, if a herd breeding problem is likely to be associated with some nutritional disturbance, the clinician should at least satisfy himself that starch, protein, calcium and phosphorus intakes are adequate, that the nitrogenous ratio is correct and that the calcium-phosphorus ratio is narrow.

Finally, our comments must not, under any circumstances, be regarded as a criticism of grassland improvement. Liming, leys, lucerne, etc., are essential if production is to reach the level demanded by present economic conditions. Constantly, when discussing our observations, we have stressed that we are staunch supporters of grassland improvement. If improved pastures, dried grass and lucerne do sometimes contribute to the infertility problem, then it is up to the members of the veterinary profession to solve the problem in such a way that the fullest use can still be made of these valuable feeding-stuffs.

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Discussion

The Chairman explained that Mr. Deas, the first opener of the discussion, was unable to be present, and as it would be difficult to make a good précis of his paper, suggested that it should be published in *The Veterinary Record*. (The meeting agreed.)

The contribution forwarded by Mr. D. W. Deas, M.R.C.V.S., Veterinary Laboratory, Eskgrove, Lasswade, Midlothian, was as follows:—

In opening this discussion I would first of all take the opportunity of congratulating Mr. Hignett on the excellence of his paper. His subject is not an easy one to write upon, as the different aspects of herd infertility have tremendous ramifications, interesting the bacteriologist, endocrinologist, physiologist, nutritionist and almost everyone interested in agriculture. Nevertheless, he has managed to embrace most aspects of this tantalising subject in an admirable fashion, and has raised many extremely debatable points.

Herd infertility as a subject has changed much in the past ten years. For long enough, breakdowns in herd fertility were associated with Brucellosis, but with the widespread use of strain 19 vaccine Brucellosis has been controlled, and I agree with Mr. Hignett that infertility following Brucellosis no longer plays a major part in our investigations.

In the past few years our knowledge of the breeding behaviour of our dairy animals has increased steadily. As mentioned previously, Brucellosis does not play such a major part. Trichomoniasis diagnosis has been made easier and with the spread of the artificial insemination programme on a nation-wide basis vast amounts of work have been done in this and many other countries on the sire as an important factor in herd breeding, and the amount of statistics gleaned from insemination centre records is a major contribution in our increased knowledge of herd infertility. For instance, infertility is often associated with the winter milk programme and the breeding of animals in the winter months, yet the artificial insemination reports do not substantiate this. Conception rates for the four quarters of the year remain fairly steady with a slight drop from April to June.

The life of a dairy cow is a short one, and during her average span she is geared up to a high-pitched efficiency to produce practically as soon as she conceives her first calf. She is required to produce a calf every year, often at a time when, it is believed, Nature least intended her to do so. She is required to produce large amounts of milk. She is required to graze on pastures heavily treated with artificial manures to force the herbage to feed her and her often over-crowded neighbours, and to spend practically all her life eating and digesting food. It is not surprising, therefore, that her pituitary gland may become over-worked and that an increased interest should be shown in the possible effects of her unnatural existence. The nutritional aspect is of importance, and this has been dealt with by Mr. Hignett in his paper.

He does not further obscure the position by incriminating the trace elements. Deficiencies of manganese have for long been associated with infertility in cattle, but there is absolutely no proof that this is the case, and, personally, I have had no success with the oral administration of manganese. Cobalt deficiency may play

a part, particularly on known cobalt-deficient pastures, and one would expect the cobalt deficiency to affect the animal's nutritional level primarily and its reproductive mechanism secondarily. Iodine, due to its linkage with the thyroid gland, may play a part, but in this country its association with herd infertility is very doubtful. Vitamin deficiencies, particularly vitamin A, are known to play a part in infertility, but in this country such a deficiency is extremely unlikely. This is also true of vitamin E, the administration of which has been credited with good results, but its value would appear still to be proved.

Mr. Hignett now turns to the calcium/phosphorus ratio. He refers to minimum requirements of phosphorus, but surely this figure is still uncertain for even the growth of the animal, much less the fertility, and as so little is known from this angle one can only theorise regarding its influence on reproduction. The suggestion that the ideal calcium/phosphorus ratio is 1/1 is a subject for much discussion. The ideal ratio for growth of the young animal is generally taken as that of the milk of the species, which in the case of the cow is approximately 1/1, but at no other stage in an animal's life is the ratio likely to be so near unity. It is constantly changing from growth of the young animal to maturity, throughout lactation and during pregnancy.

A deficiency of phosphorus, an aphosphorosis, has been associated with herd infertility in this and many other countries, mostly in cattle grazing on inferior pastures. In Scotland it is agreed by most workers that the pastures of practically all the Scottish hills are deficient in phosphorus and many contend that there is much herd infertility in cattle grazing on them. Improvements in the calf crops on these grazings have been recorded following the feeding of mineral supplements rich in phosphates—notably bone meal. It may be that the improvement in fertility is due to the increased phosphates in the diet or it may be due to the improved general bodily condition of the animal, as it has been proved that with the addition of the mineral supplements increases in appetite occur which lead ultimately to an increased nutritional level. This would appear to be an important point; even if we assume that the infertility in such cases is due to a reduced phosphorus intake, the clinical picture reveals the cause as a reduction in ovarian activity. In the main, apart from bone chewing, poorish condition, etc., the animals failed to show any ovarian activity for long periods following parturition. Rectal examination of the ovaries reveals either pure anoestrus or suboestrus with corpus-luteal formation. If and when the animal comes into oestrus little difficulty generally is experienced in getting her to conceive. We do not really know whether the deficiency of phosphorus plays any part in the production and balance of the gonadotrophic hormones, but if, on the other hand, feeding of the supplement leads to an increased nutritional level, the infertility resembles that commonly seen in marginal farms, particularly in bulling heifers, fed on a bare maintenance diet. This also substantiates the view that bad herd management associated with faulty nutrition—and I am not referring here to the calcium/phosphorus ratio—plays an important part and predisposes to infertility. The ovarian picture here certainly does not appear to resemble that described in Mr. Hignett's paper.

Low conception rates have long been said to be associated with intensively farmed pastures, but I cannot believe this to be the case in respect to a well-organised, modern dairy herd. Reports regarding this question are often to be read in farming papers and it is now quite commonplace to hear farmers mention that they would not get animals in calf until they were run on old pastures. I have found that this statement camouflages a multitude of ills, and I personally would like a definition of the term "old pasture." In the south of Scotland heavy liming and slagging have been carried out for very many years, but I, personally, doubt very much if there is an increase in the infertility rate associated with this well-known high standard of farming. When this question is probed deeper there is often another reason for the infertility, and observations in my area leave little doubt in my mind that the most important cause of herd infertility is venereal in origin and is associated with *Vibrio foetus* infection. *Vibrio foetus*, as a cause of abortion, has been known for many years. Plastridge *et al.* (1943-47-48) in the U.S.A. noted a reduced conception rate in positive herds and Sjollema, Stegange and Terpstra (1949) described a condition, enzootic sterility, in Holland associated with this organism. It has also been isolated in human abortions (*Lancet*, 1950) associated with a septicaemia and placentitis. In the past Trichomoniasis has been described as the cause of infertility in the small herd, where the farmer, unable to afford a bull of his own, has to resort to the use of a communal bull. This may be so, but it appears from a survey of the herds where *Vibrio foetus* has been isolated and has been associated with the cause of the infertility, that this organism may affect herds of a higher standard, frequently the pedigree herd of a progressive farmer, who is constantly striving to improve it by the use of old, proven sires. In practically all the outbreaks of infertility associated with *Vibrio foetus* I have met, it has been possible to associate them with the introduction of a new bull. In this connection it has to be realised that in my area the dairy farmer is almost exclusively stocked with Ayrshire cattle, and these farms are in the main self-contained as far as the females are concerned. There is, however, a very large movement of proven bulls, particularly among Ayrshire breeders, and I feel it is safe to say that in no other breed in this country is there so much hiring of bulls, loaning of buls, and taking particular good cows to certain bulls for the purpose and in the hope of getting a good calf. It is, therefore, easy to see how a venereal infection could flourish under such conditions and consequently it may be that the incidence of *Vibrio foetus* infection, or infertility associated with this organism, may be high in the herds making use of proven sires and hired old bulls. The tracing of some outbreaks is comparatively simple, particularly when the infertility is introduced by a bull. Careful scrutiny of the service records will generally show a precipitous drop in the conception rate, usually starting from the first female served in the herd by the bull in question. The disease invariably would appear to manifest itself by irregular returnings to oestrus varying from 21 to 50 days or more. It would appear also that the average oestral break of the cows is approximately 25 to 26 days. In these cases conception would appear to take place, but early foetal death occurs, and the animal returns to oestrus at an irregular period. This is substantiated by rectal examinations. Conception may be prolonged, and an observant dairyman may notice a sign of an early abortion when maybe an eggcupful of yellowish discharge is passed, the cow coming into season two or three days later. In some cases there would also appear to be a catarrhal infection of the cervix and uterus and such a dairyman may observe a very slight muco-purulent discharge, or that the discharge is more fluid than normal. Generally, however, in such an outbreak of infertility little discharge, if any, is noticed, unless the infection is mixed, when a fairly copious discharge may be noticed shortly after service. After repeated services by the same bull conception eventually occurs, once the cows have developed a tolerance, and concurrent with this the abortion rate increases, the foetus being aborted usually at from five to seven months; in one case the organism was isolated from an eight-and-a-half-month abortion and in another as early as three and a half months. The abortion rate cannot be compared to the storm associated with *Brucella abortus* and generally varies between 2 and 10 per cent.

The period between the first service and the eventual conception resulting in pregnancy may vary considerably from herd to herd and from cow to cow. In some outbreaks the cows would appear to settle about four to six months after being infected. In other herds this time may be shorter and in others it may be longer. Individual cows in some outbreaks may settle very early, while other cows may take up to eight months or more to settle. In such an outbreak of infertility associated with the introduction of an infected bull, the stock owner may not associate the infertility as being a venereal infection and consequently may introduce a fresh bull—maybe his own and generally a bull he knows to be a sure stock-getter. The picture here, I think, proves that a venereal infection does exist, in that cows which have already been served by bull No. 1 and which have been re-served by bull No. 2 still persist in returning irregularly to oestrus. Very often the introduction of a second bull will result in a fair number of cows settling, but soon it is apparent that the new bull becomes infected, for fresh cows served by him start coming irregularly into season in a similar manner. Farms have been visited where such a succession of events has occurred and where two or three other bulls have been tried. The time limit between the introduction of a fresh bull to serve cows already infected and infection of that

particular bull seems to vary, but records are available where the fresh bull has become infected after the first service of an already infected cow.

The course of events in an infected herd varies considerably, but if drastic steps are taken the course of infertility can be checked. Treatment would appear to be unsatisfactory, particularly iodine irrigation, but some good reports of penicillin irrigation are available. The use of artificial insemination in such a herd helps considerably, but the artificial insemination conception rates are invariably poor, particularly in infected cows, and the course of events runs on with the cows breaking irregularly until eventually they conceive.

Where abortion has occurred following eventual conception the foetus is generally, as already mentioned, about five to seven months. In early abortions the foetal membranes are often expelled with the foetus and evidence of a cotyledonitis and placentitis can be seen. Smears taken from the cotyledonary attachments in such cases reveal *Vibrio foetus*. If, however, the foetus is expelled later in pregnancy there is every chance that the membranes will be retained. The foetus is generally well preserved and the stomach contents, invariably yellowish, turbid and mucoid, contain the organisms, which are easily stained with dilute carbol-fuchsin.

The isolation of the organism from the foetus may be difficult, particularly as it is rapidly killed by contaminant organisms, and for confirmatory diagnosis the foetus must be obtained as early as possible.

Where the course of events has been allowed to run on unchecked and the farmer has persisted in using the infected bull, the conception rates improve in the second year by which time infected females may have developed an immunity or tolerance. Improvement may be considerable, but it is generally far short of normal and it will be found that infertility is still bad. The abortion rate, however, may remain high in the first calf heifers when introduced to the main herd. In other pedigree herds, using proven sires on maiden heifers, the conception rate in the herd improves, but yearly infertility still persists in the maiden heifers. As will be seen, the history of infertility associated with *Vibrio foetus* infection closely resembles Trichomoniasis and it may well be that some of the outbreaks of Trichomoniasis previously diagnosed on clinical grounds without the isolation of the organism, may in reality have been due to *Vibrio foetus*. Similarly, too, we hear of so-called outbreaks of granular vaginitis which have not been properly described or explained. In the past six months I myself have revisited several farms where three to four years previously Trichomoniasis was diagnosed on clinical grounds, but where the organism was never isolated, and as a result of my knowledge regarding farms where *Vibrio foetus* has been implicated and of the movement of infected bulls, and by checking the subsequent history, including the abortion rate, it is almost certain that the condition present was associated with *Vibrio foetus* and was not *Trichomoniasis*. In three farms in particular it is possible to be certain that this was so.

Let me now describe the course of events in a herd where *Vibrio foetus* was isolated and was implicated in infertility. Infection was introduced by a bull, hired in June, 1949, from a neighbouring farm where a crippling infertility with a rise in the abortion rate had been experienced and where *Vibrio foetus* had been isolated from a five-month abortion. The farmer's own bull had been settling normally, but 23 days after the introduction of the hired bull he served his first cow, which had returned to the hired bull and become infected. Thereafter he did not settle one cow for three and a half months.

From the introduction of the infected hired bull the conception rate fell. From July to October the conception rate was 12 per cent. In November a fresh bull was introduced and the conception rate rose to 43 per cent. From December to April it stayed at 31 per cent., by which time the new bull, unfortunately, had become infected and a number of cows had by this time developed a tolerance. In May another fresh bull was introduced to serve newly calved cows; his conception rate to date has been satisfactory. In another farm using proven sires and in which the immunity of the herd had been established over a period of three years, the conception rate was considered normal, yet not one of ten heifers brought for service by a neighbour settled.

In yet another farm where three years previously I examined a bull reputedly infertile, as the cows were returning to service irregularly, and where on semen examination the bull appeared satisfactory, the present position was investigated. The initial infertility in the cows had died down, and the herd conception rate was considered fairly satisfactory, but the maiden heifer conception rate was very poor. Shortly after my visit a cow aborted an eight-and-a-half-month foetus and the organism was isolated. The abortion rate in the herd over the past three years had been very low and no figures were available, but records revealed that the cow in question had given considerable breeding trouble three years previously. This farmer has recently been using a proven sire and the conception rate in cows brought for service by other breeders has been very poor, yet the conception rate in his own stock has been fairly satisfactory.

So far I have dealt with outbreaks associated with spread of infection by a new bull. Where, however, infertility is cow-borne diagnosis is far from easy. Breeding records (the abortion rate is important) must be studied carefully and thoroughly over the past few years to ascertain if any bought-in cow can be incriminated. Sometimes an owner recalls a certain "dirty" cow, but frequently the position is obscure. The history may resemble that described by Mr. Hignett as being associated with a calcium/phosphorus imbalance. Outbreaks similar to this were met recently implicating four farms. On the first farm the question of nutrition was examined; the herd for the past five years had been out-wintered, fed on nothing but grass silage and concentrates, and grazed on new pastures. Further questioning on this farm revealed that in the past bulls had been changed with a neighbouring farmer. Investigations on this second farm at first were fruitless. Shortly after the initial visit, however, trouble was experienced in heifers and investigations revealed that in the space of time between the two visits fertility in this herd had broken down. Tracings revealed a similar position in two other farms as a result of bull spread from this farm. In all four farms no other outside source of infection could be implicated, and it seems clear that infection originated in the first farm, although the actual source was not detected. Since then the abortion rate in the second farm has increased, three abortions occurring in two months, compared to one in the past five years. *Vibrio foetus* was isolated from one of the abortions.

It will be realised how difficult it is to make a diagnosis where for no apparent reason infertility breaks out with no recognised bull-borne spread. Histories associated with *Vibrio foetus* are sometimes confusing, and many aspects require further consideration, *e.g.*, how long does the tolerance in cows last; how long does a cow remain infective, and is infection spread only at coitus?

The above observations on the venereal infertility I have met with, and particularly the oestral behaviour of the cows, closely resemble the condition described by Mr. Hignett perhaps to be attributed to a luteal deficiency and it may be that two separate conditions exist. It is also true that heavy liming is carried out in the farms discussed. The infertility I have described varies considerably from farm to farm and sometimes it may clear up rapidly following simple control measures; it is generally realised that the time factor plays a great part in the control of infertility. If, however, the calcium/phosphorus ratio is narrowed on such a farm when the animals have reached a point where tolerance to *Vibrio foetus* has been developed, a rapid improvement might wrongly be attributed to the narrowing of the calcium/phosphorus ratio.

Investigations of outbreaks of infertility associated with *Vibrio foetus* involve many tracings and after working among farms with positive histories and becoming acquainted with the various movements of infected bulls (one well-known sire is known to have introduced the infection to four farms) it is possible to view the position in greater perspective.

As a result of co-operation with colleagues in England successful tracings have been made linking up infertility there with Scottish outbreaks, and it may ultimately be found that *Vibrio foetus* infection is more widespread than is at present believed.

Mr. J. Smith, M.R.C.V.S. (Carmarthen), who was the second opener of the discussion, said:—

I must first of all express my personal thanks to Mr. Hignett for the very comprehensive way in which he has dealt with the numerous factors which influence the reproductive capacity of our

herds. I also owe thanks to Mr. Deas for the very able way in which he has opened the discussion. Both Messrs. Hignett and Deas are specialists in the field of bovine fertility in that they have devoted a great deal of their time and attention to the subject. As for myself, I cannot and do not profess to be an expert on the problem, but the fact that I have to accept responsibility to the Milk Marketing Board for the A.I. service now being utilised on some 8,000 holdings in this and adjacent counties means that I have to show more than a passing interest in the problem of herd fertility upon which so much attention is now being focused by interests, veterinary and agricultural. I propose to deal with the subject on a very broad basis, my observations being of a very generalised nature.

As regards the incidence of infertility, I feel this is difficult to assess in terms of statistics because *a very great deal of it is temporary*, some of it clearing up following veterinary treatment and a lot of it being of a transient nature and disappearing with the healing factor of time.

That a similar state of affairs exists in the U.S.A. is shown from the following data presented by Dreher to demonstrate that lowered fertility does not afflict the same cows year after year. The study involved 512 cattle bred by A.I. over a period of six years.

(*a*) Cows conceiving to first service the first year had only a 58 per cent. chance of conceiving on first service the next year. 8 per cent. of those animals required four or more services before conceiving the following year.

(*b*) Of cows requiring four or more services for conception the first year, 45 per cent. conceived at first service next year. Only 12 per cent. required four or more services two years in succession.

We must, however, accept the fact that owing to the end-products of our herds being comparatively more remunerative to the farmer, the influence which infertility can have on curtailing the productivity and financial return of our herds means that in the first instance the herd owner directs his attention to the problem to a greater degree than he would pre-war, and herein lies the reason why our profession in turn is asked to play its part in what has now become a complex issue of economic importance.

Study of the problem on a herd basis is essential, primarily because the herd is the farmer's unit of production, and secondly because conclusions and deductions based on a group of animals maintained under similar conditions must be of more significance than those based on individual cows.

Prior to being engaged in A.I. work I was in general practice in the South Wales area and until four or five years ago I can honestly say that many herd fertility problems manifested gross clinical signs indicating invasion of the female genital tract with organisms, and the conditions undoubtedly were largely due primarily to Brucellosis, a certain amount of Trichomoniasis and other less specific infections of bacterial origin, including secondary invaders.

The N.V.M.A.'s control scheme started in 1942, followed by the Ministry's calf vaccination scheme with S.19, and more recently the use of artificial insemination in the prevention of transmission of venereal and other infections through communal bulls used in natural service: all these have very considerably reduced the incidence of conditions showing pathological lesions of the female genital tract so markedly responsible in the past.

The over-all picture obtained from studying the records of an A.I. centre with conception rates around or above national average level shows that herds with low fertility levels are in the minority—indeed, their next-door neighbour owners often talk of their own satisfactory results obtained from using exactly the same service.

A veterinary colleague of mine in practice who makes a particular study of herds using artificial insemination maintains that little more than 10 per cent of the owners complain of bad results.

However, it is often the case that the owner of the herd with the low fertility level calls in his private veterinary surgeon, who, after a thorough clinical examination of the females' genitalia, informs the farmer that he can see nothing the matter with them. The herd owner in due course often writes or telephones me to say that in view of this advice given by his private veterinary surgeon he is forced to conclude that the fault lies in the A.I. service.

That the A.I. service produces satisfactory results in other herds and that the veterinary surgeon can find nothing of clinical significance in the low fertility herd using the same A.I. service means we are facing a more obscure problem, where I fully concur that the influences of (1) heredity and (2) nutrition (the latter associated with or part of general farm and herd management) play the major rôle in the disturbance.

That inheritance factors may open the way to the full expression of nutritional disturbances is undoubtedly proved by the fact that the more indigenous strains of Ayrshire in the Midlands show higher fertility levels than those imported from other parts. Another example is evident in the Guernsey breed, whose fertility levels in the far west of England are apparently much more satisfactory than those in the south and south-east.

Viewing the problem in a broad sense, it appears that the general influence of farm husbandry is a basic factor with which we have to deal. I feel certain that adjustments in management, often on some finer details, can alter the fertility picture completely, and this is demonstrated by the fact that our A.I. records show certain individual herds often enjoying a year of very high conception rates to be followed in the subsequent year by a phase of very low fertility in the herd. Then for no apparent reason something suddenly happens and the problem cows one after the other begin to conceive. Such a state of affairs has been observed in quite a number of herds in this area, and in the absence of *pathological* evidence one must accept that a husbandry factor causing *physiological* upset is responsible for the temporary setback.

The additional financial incentives granted to farmers for milk produced in the heart of winter make confusion in this complexity more confounded. We find the herd owner endeavouring to get the bulk of his cows and heifers to calve in September, October and November and to achieve this he goes all out to have them mated in December, January and February, when, as we all know, the problems of anoestrus and suboestrus are at their height due to cows being kept largely indoors as they are in the peak of production. The absence of a very liberal ration of concentrates usually means that the basis of the dietary is hay of a very poor quality, often not much over 5 per cent. protein content—the poor quality in these areas being due to heavy rainfall making conservation very difficult, so much so that hay with a good protein content is more the exception than the rule.

The anoestrus and suboestrus problems are worsened by A.I. accounting for the gradual disappearance of bulls from farms, and as a result we find A.I. service being used in winter in many cases where the insufficiently observant herd owner or attendant has seen no real positive signs of oestrus. The indiscriminate use of stilboestrol dipropionate on anoestrus cattle does anything but simplify matters, and thus we find that many cows and heifers assumed to be in calf after mating to a false heat show real signs of oestrus only after a period at fresh luscious spring pasture.

This means that calving is later than was originally planned and to obtain a flush of remunerative winter milk in subsequent years the farmer tries to achieve earlier winter calving in other cows in the herd. This he does by cutting the interval *post partum*. Thus in a small survey taken on a number of cows last winter it was found that those calving in October were allowed on the average 67 days before the first service, November calvers were allowed 54 days, December calvers 51 days and January calvers 41 days. The number of cows in the survey was small (only amounting to some 400), but the figures are such as to show that farmers will try to push forward the calving dates to increase the milk flow when the price paid is highest. Van Demark and Salisbury, of Illinois, have shown that fertility levels increase with the length of *post partum* interval up to 100 to 120 days, and that nearly 2·6 services per conception were required on the average for cows first bred within 40 days after calving, whilst for those first mated at an interval of 100 to 120 days an average figure of only 1·7 services per conception were required. In this country Mr. J. Edwards, of the Production Division, M.M.B., has shown that an interval of approximately 90 days or more after calving is necessary to obtain maximum fertility levels, and that with an interval as short as 30 days the conception rate to first mating is under 50 per cent., whilst at a 90-day interval it is over 70 per cent.

In a western district of South Wales where there is intensive concentration on autumn calvings, our A.I. records showed that a

group of several hundred cows artificially mated November-February were allowed an average of 68 days *post partum*. A similar sized group, again first served November-February, but located towards the east in a marginal farming area where there is not the push for winter milk, were allowed an average of almost 100 days *post partum*. Conception rates for the short interval group were of the order of 60 per cent., whilst those for the 100-day group were around 70 per cent. to first matings.

Our A.I. records show a very apparent increase in the number of cows returning to service at irregular intervals. This is probably the most common finding in our problem herds and sometimes it is found within and at other times without the anoestrus and suboestrus herds. The incidence of returns in winter at ten days or less is becoming heavy and ovarian disfunction associated with hormonal disturbance resulting from nutritional fault is more than likely to be the explanation. Our attention is being increasingly focused on those cases of return to service at four, five, seven or eight weeks, or greater irregular intervals, and unlike the repeats at ten days or less they do not necessarily occur in winter but are found in the whole or part of certain herds irrespective of season of the year.

Interruption of pregnancy with early abortion or reabsorption of the foetus and return to service at irregular intervals must be the explanation, but in the complete absence of any evidence of infection ovarian disfunction with luteal deficiency is aetiologically significant. I must endorse Mr. Hignett's view that this phenomenon is most noticeable on farms where a real concerted attempt has been made by the farmer to support his herd by more and better home-grown foodstuffs.

I would like now to quote some details of a large-scale infertility investigation carried out in the U.S.A. at Shawano under the direction of Dr. Casida.

Over 100 problem cows under ten years old, having bred one calf and showing normal and regular heats with no genital abnormalities being revealed following thorough rectal and vaginal examination, were assembled for study during the winter of 1947-48. All had been mated at least four times by artificial insemination or natural service without results. The experiment was repeated the following winter, 1948-49, with just under 100 cows. Procedure was as follows:—

(*a*) Blood samples were taken to determine vitamin and mineral levels and also to carry out the agglutination test for *Br. abortus*.

(*b*) Cows were checked twice daily for oestrus signs.

(*c*) They were inseminated on the second heat check.

(*d*) Ovaries were examined at each check until ovulation had occurred.

(*e*) The animals were split into two groups, the first group being examined and slaughtered three days after insemination to determine fertilisation rate and the second group being examined and slaughtered 34 days after insemination to furnish information on embryonic death.

Finally, a very thorough *post-mortem* examination was carried out for abnormalities and this included bacteriological and histological tests. The results were as follows:—

(*a*) Oestrus and ovulation were amazingly regular.

(*b*) During the year 1947-48 2 per cent. of the Guernseys and 18 per cent. of the Holsteins were found to be abnormal in that their oviducts were obstructed. There was a great reduction in this finding the following year as a result of much more careful examination before assembly of the cattle for the experiment. Of those showing no abnormalities 61 per cent. of the Guernseys and 71 per cent. of the Holsteins killed at three days had fertilised eggs in the oviducts, but only 20 per cent. of the Guernseys and 25 per cent. of the Holsteins had living embryos when killed at 34 days after insemination. Thus the fertilisation rate was fairly satisfactory, but the embryonic death rate was alarming. It was evident that the main cause of lowered fertility was embryonic death at an early stage, 67 per cent. in the case of the Guernseys and 64 per cent. in the Holsteins.

(*c*) Bacteriological, histological and blood examinations revealed nothing of significance.

(*d*) Reactors to the agglutination test showed evidence of a higher embryonic death rate, but this was not confirmed during the second year of the experiment.

(*e*) Three- to four-year-old cows showed a 75 per cent. fertilisation rate and a 57 per cent. embryonic death rate, whilst five- to nine-year-old cows had a 57 per cent. fertilisation rate and a 73 per cent. embryonic death rate. Thus older cows apparently are more prone to return to service.

(*f*) Poor breeding herds had a 45 per cent. fertilisation rate and 50 per cent. embryonic death rate, whilst good breeding herds had an 87 per cent. fertilisation rate and a 72 per cent. embryonic death-rate. Thus return to service in the odd cow in good breeding herds is apparently due to embryonic death.

Dr. J. A. Laing, of the University of Bristol Veterinary Field Station, on similar work done with maiden heifers, has confirmed that early death of the embryo may occur in apparently normal cattle and with little confirmatory evidence as to its aetiology.

The veterinary surgeon examining a herd with a history of infertility and finding the female genitalia perfectly normal with complete absence of any infection should not, therefore, jump to the conclusion that failure to breed is due to infertility on the bull side, or inefficiency of the A.I. service. The experiments of Casida and Laing show that the semen of the bull (or rather the A.I. service) was capable of effecting fertilisation, but that embryonic death caused early interruption of pregnancy, even in cows which appeared clinically normal.

Before concluding, I would like to say how interested I have been to follow Mr. Hignett's informative and sound exposition on the relationship between nutrition and reproduction and in particular the details regarding the calcium/phosphorus ratio, and on how present-day farming systems can so easily account for the imbalance, a factor which he has shown can be responsible for infertility arising from foetal death in our herds.

Finally, I must thank the Congress Provisional Committee for the very high honour I have been accorded in being asked to act as an opener of the discussion on a subject which I feel warrants much closer study by our profession.

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Mr. H. W. Steele-Bodger, M.R.C.V.S. (Tamworth), who was the third opener of the discussion, said: I have read Mr. Hignett's paper with great interest and admiration, and have also listened to his opening remarks and those of Mr. Smith. Both speakers set a high level which you will not expect me to maintain, but a contrast often serves to emphasise values.

I would like to pay tribute to Mr. Hignett for the tremendous amount of work which he has done for our profession, not only in this field, but in many others. I am quite certain that no one ever in vain approached him for advice, assistance or co-operation and I shall ever be grateful to him for his loyalty and industry during the time that I was chairman of the Survey Committee and for the consideration and patience with which he continues to support me in my endeavours to comprehend the many facets of the infertility problem. I have never quite been able to make up my mind whether Mr. Hignett is primarily a clinician or a research worker; in either field he is pre-eminent.

In reading Mr. Hignett's paper I have only one complaint to make—I think that he has been unnecessarily modest and unduly cautious. In a field so varied and so full of pitfalls, dogmatism is unwarranted and ill-advised, but I am satisfied that the evidence which Mr. Hignett has marshalled in support of his beliefs is such that he could afford to speak with greater confidence and assurance.

A perusal of literature shows that workers in several countries have reached the same conclusions as has Mr. Hignett, though they have approached the problem from different angles. Mr. Hignett has, in his paper, referred briefly to a number of authorities, and it is, I think, unfortunate that space and time have prevented him from giving fuller references, many of which are of great interest. The works of Orr, Theiler, Meigs, Turner, and Holtz are well known; less well known, however, is the work of Webster. Webster comes of a very fine vintage year at the "Dick"

College. Amongst others who graduated then were Montgomerie, McEwen, Hill-Motion, to whose work Mr. Hignett also referred, Bateman, and at least one other whose name I will not mention—indeed, modesty forbids that I should do so!

I would like to pay special tribute to Maurice Webster, of New Zealand, whose unpublished work on "A Correlation between the Breeding Efficiency of Dairy Herds, their Butterfat Production and the Mineral Content of Pastures" is outstanding. It is painstakingly prepared and convincing. The pity is that this report, completed many years ago, was never published. Had it not been pigeon-holed, it would have saved many of us a lot of time and speculation. In some respects Webster's report carries more weight than does Mr. Hignett's paper in that his work, which was on a very large scale, was almost entirely confined to cattle fed on free range of grass and was uncomplicated, therefore, by the diverse and complex rations which are used in this country. Apart from his conclusions, which corroborate those of Mr. Hignett concerning the close association between a high fertility rate and the narrow calcium-phosphorus ratio, combined with an adequate phosphorus content, Webster in a statistical survey of the breeding operations of 550 dairy herds aggregating some 24,000 cows, contrasted hand service with the method of allowing the bull a free run with the herd, and maintenance by means of home-reared heifers as against outside purchases. Hand service proved to give better results than allowing the bull his liberty in the herd, and, under either system, maintenance through outside sources showed a decrease in the general breeding efficiency and increased percentages of abortions and barren cows. Of the four alternative combinations, hand service coupled with home-reared heifers gave the best results, with 74 per cent. conceptions resulting from the first mating. Permitting the bull a free run and maintaining the herd by saleyard purchases was the least satisfactory combination, showing only 62 per cent. of conceptions from the initial mating. This careful work confirms what many of us believed to be true, but were unable to prove.

Incidentally, I must express my surprise at the evidence given to us this morning by Mr. Smith concerning the optimum time of service after calving. If I understood him aright, his figures disprove a very strong impression which I have for some long time held that in herds containing a large number of shy breeders service at an early oestrus after calving is followed by a higher conception rate.

I am satisfied that the incidence of bovine infertility in the country to-day is at least as high as it was 15 years ago; I am equally satisfied that the problem to-day is an entirely different one from that which existed when the Survey Committee published its report on infertility. I would like to emphasise this statement because I have heard it whispered, and sometimes more than whispered, that it is not so much the type of infertility which has changed, but rather the opinion and methods of the authors of the infertility report.

You will recall that in 1941 the Survey Committee stated that in its opinion most of the cases of infertility were due to specific disease and that at least 50 per cent. were associated either directly or indirectly with *Br. abortus* infection. I believe that to be a true statement of the position at that time. Now, however, for the first time probably since the days of Moses, contagious abortion has ceased to be a major problem, and I would join with Mr. Hignett in paying tribute to the Ministry of Agriculture for making available Strain 19 vaccine.

I would, however, like to ask about the apparent implication in Mr. Hignett's Table II that Strain 19 might have been responsible for infertility. It is sometimes very difficult to satisfy a client that Strain 19 is not, in fact, responsible for infertility in the herd. He will produce evidence that for years he has had no infertility amongst his heifers, and that as soon as they were vaccinated he could not get them in calf. We have on a number of occasions on the same day, using the same batch of vaccine, vaccinated heifers on adjoining farms, in one instance on different sides of the same road, but animals running on pastures or leys managed differently. In some there would be almost 100 per cent. infertility following vaccination; in others almost a 100 per cent. conception rate to the first service. It is only by giving such instances that one can dissuade farmers from the belief that on a number of occasions vaccination with Strain 19 may be prejudicial to fertility. Might not the explanation of Table II be that the farmers who used Strain 19 vaccine were those 'progressive' farmers who had limed heavily?

In 1941, on the available evidence, we stated that the average period of infertility was three months. I would hazard a guess that by strange coincidence the period of temporary infertility is still about the same, even though the infertility arises from a different set of circumstances.

In pre-war days the herds in which a high incidence of infertility occurred were largely those belonging to what would to-day be considered Class C farmers, and infertility was in the main due to pathological changes in the genital tract. Now, however, the problem of infertility is much more a herd problem, and much less frequently due to specific disease. In my experience the greatest sufferers are the Class A farmers—progressive men, who have done practically everything the Agricultural Committees have instructed them—not everything, because I am assured no farmer could carry out all the instructions of the Agricultural Committee, and survive.

It is true, as Mr. Hignett has said, that there are few specific infections to-day which are responsible for infertility on a herd basis, and, whilst one must ever be on the look-out for evidence of these, one must preserve an open mind and consider each herd problem individually.

When one is possessed of no more than the average amount of 'grey-matter' which limits one's scientific horizon, it is useful to have an additional asset; in my case I am fortunate in possessing a facility for acquiring a clinical hunch which in a surprising number of instances turns out to be accurate—even though my reasoning may be illogical. However, if I may twist a recent expression from a distinguished client of our distinguished President, "It is better to be illogical and right than to be logical and wrong."

It is not my intention, even were I able to do so, to discuss the actions of the anterior pituitary gland or the effect upon it of a varying calcium-phosphorus ratio; rather is it my purpose to speak as a clinician who, being, I hope, not unintelligent, and having been interested in, and a keen student of, the subject of bovine infertility for a quarter of a century, has acquired a considerable experience therein, and recorded some impressions or hunches.

During the early part of the war, when I was engaged in giving refresher tuition in pregnancy diagnosis to my colleagues in various parts of the country, I soon became aware that in very many herds where a high incidence of infertility existed, there was a surprising lack of evidence of any specific disease, and it was not long before it became apparent that in these particular herds there was one constant associated factor—heavy liming, often without the addition of any other fertiliser.

My first hunch about lime being associated with infertility occurred in April, 1941, when in the herd of a producer-retailer in Anglesey I found 25 out of 26 cows empty and free from observable clinical disease—the 26th cow was believed to be pregnant, and it was only after much persuasion that I obtained permission to examine her—and found her also to be empty. The history was that the farmer had applied 2 tons of lime to the acre, not because the land required it—that we do not know—but because lime was subsidised and it seemed a good bargain.

I recall another instance where there had been a history of high fertility over a number of years in a well-known pedigree Angus herd. The supervision of the herd changed in that the owner employed a new agent, who happened to be the Chairman of a War Agricultural Executive Committee. His first job was to have all the fields analysed, and as a result of that analysis it was arranged to give the park a dressing of lime of 2 tons to the acre: that land had not been limed over the previous 20 years, the herd was self-contained, there had been no abortion and no infertility. A newly purchased, high-priced young bull ran with the cattle, and, after a time, it was noticed that the cows returned frequently to service. Upon investigation it was found that out of 34 Angus cows, there were only four pregnant in the herd, and that three of those animals were the first that had been served after being turned on to the limed pasture. There were four other animals pregnant, but they were Shorthorn nurse cows, and when I asked were they also running on this pasture, and the bailiff went into

it, it was found that not one of those nurse cows had trodden on the limed pasture.

I examined five of the Angus cows, all of which had been in oestrus during the past 48 hours, and not a single one had ovulated.

Subsequently some 25 blue-grey heifers were also turned on to this pasture and served by this same bull; seven of these became pregnant, and five of them were believed to have been the first served after they went on to the pasture.

The bull was reputed to be responsible for the low conception rate, and he may have been partly responsible as he was exposed to the same conditions as the females.

Subsequently he was kept up, and I telephoned yesterday morning to find out his present conception rate, and I was informed that this year—that is three years later—17 out of 25 Angus females have proved fertile to a first service by him.

I agree with Mr. Hignett that one must not stop liming, but that the lime should be applied with discretion—a little at a time. I always recommend that dairy farmers should, whenever possible, reserve an old, unlimed pasture on which to run their cows until they are safely in calf.

I would remind you that Sir James Scott-Watson said in his summing up at the conference on Mineral Mixtures in Compound Feeding Stuffs:—

"It also appears from what we have heard to-day that most of our feeding standards put calcium requirements too high; that we are in general inclined to put in too much lime, and that the excess may interfere with the absorption of phosphate. A gross imbalance must be bad. What we do not know is how widely the proportions can vary without bringing serious trouble."

I am indebted to Mr. Hignett for help and advice in the elimination of many infertility problems and I can testify to the spectacular rise in the fertility rate in many herds which has followed upon the raising of the P_2O_5 intake and a narrowing of the CaO : P_2O_5 ratio.

I have abundant evidence also to confirm his statement that many of the animals which do conceive possess either small or cystic corpora lutea and that it is a common occurrence in these herds for the pregnancy to terminate between 28 and 45 days. I believe also that the unfavourable conditions produced are conducive to the establishment of both specific and non-specific infections.

Yesterday morning I rang up and asked the subsequent history of an Ayrshire herd in which earlier this year there had been widespread infertility. The herd had been fed on a ration almost exclusively at one period of dried grass with a very high protein content, and on analysis it was found the P_2O_5 content was very low and the CaO content very high. In this herd there were a lot of animals coming into season at varying periods, and although pregnancy was frequently established, it was associated in almost every instance with poor quality or cystic corpora lutea. An alteration of the ration, and the addition of 2 oz. to 4 oz. of bone flour meal daily, solved this particular problem.

On two occasions only in my experience has infertility been associated wih a high P_2O_5 intake and a low CaO intake. One of these was of special interest: two herds in the same village, one on either side of the road; both were Shorthorn herds, the one belonging to a 'progressive' farmer with about 35 cows and heifers and a bull, the other to a blacksmith who had 12 cows with a good herd average and who fed a mixed ration that his father had fed before him. The P_2O_5 : CaO ratio in this case was 1 : 1. He had no bull, but used that of his neighbour across the road. The conception rate was 90 per cent. to first service. The progressive farmer was feeding a ration containing a high quantity of potatoes, bran, oats and flaked maize—all high in P_2O_5. The conception rate to first service in this herd over a similar period was 27 per cent.

Mr. Hignett has referred to infertility due to an iodine deficiency. I wonder how common this is, and how often the intra-uterine injection of iodine provides that extra trace of iodine required? I remember that, following my work in North Wales, two practitioners wrote to me reporting a spectacular, and in one instance a sustained, rise in the milk yield immediately following an intra-uterine injection of iodine. One practitioner stated that in one herd each animal injected gave a rise in her milk yield.

I have a hunch that copper is more frequently associated with infertility than is generally suspected, and on a number of occasions I have treated with copper in anticipation of the biochemist's report on samples of blood, hair, liver, etc., and by the time this latter has arrived these animals treated had improved beyond recognition—often returning almost from the grave. Muir told me that in herds suffering from a copper deficiency he would not trouble to examine animals per rectum to diagnose pregnancy, he claimed to be able to tell by the feel of the female's skin whether or not she as pregnant—my touch has not yet achieved that degree of refinement, and I would hesitate to recommend it—even in the bovine!

I would like to conclude by expressing my gratitude to the Provisional Committee for having done me the honour of asking me to participate in this discussion, and I can only hope that everybody in the hall will have derived as much interest and benefit from a study of this subject and from the work of Mr. Hignett and others, as I have. (Applause.)

General Discussion

Mr. Alastair Greig (Aberdeen): We must be grateful to Mr. Hignett for preparing an admirable paper, with a well-reasoned line of argument. At the Rowett Institute in Aberdeen we have done some experiments recently on mice to determine the effects on reproduction of adding calcium salts to the diet. As Mr. Hignett has already pointed out in his paper, there is considerable danger in assuming that what applies to one species will necessarily apply to another. It is particularly dangerous in this subject because the reproductive systems of mice and cattle are quite different. However, we have evidence which tends to support the main thesis contained in the paper, namely, that an excess of calcium in the diet will affect the reproductive ability of the female animal. Our experiments have not shown conclusively in every case that the birth rate is reduced; sometimes our results have been just short of statistical significance. That may be because to obtain a satisfactory level of statistical significance in mice, where the number of young produced is normally so high and so variable, one has to use a very large number of animals to test one single point.

But we do have considerable evidence to indicate that the number of young mice produced is smaller when the calcium level of the diet is high. Much more striking are our findings on the rearing of the mice. We have to consider this question also in the light of what Mr. Smith saidwith regard to embryonic death; after all, birth is only an incident between the fertilised ovum stage and maturity.

Our experiments have shown that a very much greater number of mice die in the rearing stage when the calcium intake of the mother is high. We are at present considering the mechanism of this action.

I should like to ask Mr. Hignett one question to elucidate a point in his very interesting hypothesis of the possible action of a high calcium-phosphorus ratio. He has shown that a negative phosphorus balance may occur, and he makes what to me is rather a jump in his argument; he says:

"In this condition of negative balance, phosphorus is drawn from the tissues, and it may be inferred that this interferes with the production and balance of the gonadotrophic hormones."

That is more than I can follow without explanation, and I shall be glad if he will elaborate on that point.

Mr. G. N. Gould (Southampton): I wish we had more time available to discuss this paper because many statements made require detailed consideration. The time available only enables speakers to deal with a few of the many points in which they may be interested, and limits the number to the minimum. I have been interested in *Vibrio foetus* as a herd infection for the last five or six years and wrote a paper last year for the International Dairy Congress in which I expressed agreement with the prevailing opinion that this particular infection is a venereal one. I now believe that this is incorrect and have the strong clinical impression that the common method of infection is by the mouth—similar to that of Brucella infection—and that the disease is not a truly venereal one, although it may from time to time, as with Brucella, be transmitted in the semen.

In my experience the disease is responsible for a varying and often high degree of infertility with a tendency for a much higher degree to be manifested in heifers than in cows in the same herd. Investigation is required as a matter of urgency because there is evidence that this disease is becoming more and more widespread.

Reference is made to the rest from service factor in the cure of this disease. This is an important factor in the treatment of all types of infertility. In my experience of *Vibrio foetus* infection,

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enucleation of the corpus luteum to induce rapid return to oestrus followed by a rest period for three manifestations of oestrus subsequently is a satisfactory method of treatment which can cut down loss of time to between seven and eight weeks.

Mr. Hignett refers to non-specific factors causing infertility. I have noticed that in the purchase of attested herds (as opposed to purchase of occasional replacements) where the farmer has gone to market and bought individual animals from a number of different farms to form the herd, it is quite common to find that a high degree of infertility ensues. There are no diagnostic clinical symptoms—and three or four months later all the stock appear to conceive readily with no treatment. If the animals all come from the same farm this factor does not appear to operate, and I have often wondered whether the possibility of non-specific variants affecting the uterus in particular, can be incriminated, somewhat on the lines of the variants of *B. coli* infection associated with calf scour.

The major part of Mr. Hignett's paper deals with the question of the calcium-phosphorus ratio and in particular the phosphorus intake and in spite of the information given I am quite unconvinced that the theory is correct. The object of liming is to correct the *p*H of the soil. Mr. Hignett says you should follow the advice of your soil chemist, and then immediately contradicts this by saying that you should not use more than 2 tons of lime, calculated as calcium carbonate, to the acre in any one year. The *p*H of the soil is a very vital factor in growth and can be lethal to certain grasses and clovers if it is too low. It is a very vital factor in the establishment and growth of the sward. There are both heavy and light soils in which the application of 2 tons per acre would be inadequate to enable certain swards to be established or to continue to thrive.

May I ask Mr. Hignett if he would agree that an application of calcium carbonate as recommended by the soil chemist at the right time of the year, that is to say in the autumn outside the grazing season, followed by the application of phosphate as required in adequate amount, would not be good practice and whether he would have any objection to such a procedure? Mr. Hignett argues that if one applies lime in the spring, or in the grazing season, you may have a very heavy lime intake, but I cannot see how the use of lime, as recommended by the soil chemist, together with other requirements such as phosphate, particularly if applied in the autumn, can do any harm and without proper use of fertilisers it is difficult to see how really good swards can be established. It must be remembered that the effect of fertilising is to enable those plants within the sward which require such fertilisers to thrive.

Mr. Hignett records various clinical conditions he has met when examining animals in herds manifesting infertility on a herd basis. These clinical conditions are met with quite commonly in individual animal infertility not on a herd basis, so that if we are to accept this theory as the cause of these conditions, we have to accept also that there must be some individual idiosyncrasy, since the clinical manifestations are by no means restricted to cases of infertility occurring on a herd basis. This type of infertility is met every day in individual animals in various herds.

I do not wish in any way to decry the effort made in this paper to cover the field of nutrition in relation to infertility on a herd basis. The paper is to a great extent based on clinical impressions and I find myself in the difficulty that I have just as strong clinical impressions to the contrary, which makes it impossible for me, at the present time, to accept the conclusions arrived at. Mr. Hignett has drawn particular attention to the need for further research and has sounded a note of caution in respect of his conclusions which I feel we should follow until we have much fuller information available.

Dr. J. T. Edwards (London): I thank you for this opportunity to bring into focus the position, as I now see it, in this complex subject of herd sterility and infertility. In the first place I should like to pay special tribute to Mr Hignett and the enlightened body which is sponsoring his work, the Wellcome Trust. I am sanguine that the Animal Health Trust will prosecute enquiry in a similar spirit. Under other auspices, from long experience, such a spirit cannot pervade where, on the contrary, the main stress is laid on administrative formalities rather than vocational experience and competence. A prolific output of technical papers to satisfy any such other authority must not be expected from the detailed study of the stocks to be maintained necessarily over several breeding seasons under the closest possible continuous personal supervision. That is a task demanding keen powers of animal observation, careful recording, and critical and patient examination of the data, not in the light of any prejudices arising regarding the relevance of any one of the particular settled technologies which at any given moment holds sway, such as, for example, bacteriology, endocrinology, nutrition or even genetics, every one of which in its turn has been invoked all too readily as affording a clue to the understanding of the problem and for immediately suggesting a therapy, ever since it loomed more and more largely on the veterinary horizon from the beginning of the present century. But, rather, the problem must be viewed in the light of all these disciplines, taken collectively. This makes great demands upon the capacity of the worker for taking a catholic interest in the progress of all science, as well as on being a consummate animal husbandman. Failing that, tragic and widespread errors may prevail, as have indeed prevailed most distressingly during the short history of the veterinary approach, abroad more particularly, to the treatment of sterility. To illustrate my meaning, I will recount two short anecdotes.

First, in the year 1926 I was intimately associated with the late Sir John M'Fadyean, then approaching the close of his great career of just over 50 years as veterinary teacher, researcher, and adviser. At that date he was much exercised to comply with a request from the Royal Agricultural Society of England, to which distinguished body he had been veterinary adviser for many years, for a contribution to a new venture started which was intended to recapitulate progress in the whole field of agricultural research for the society's members. (*Agricultural Research in* 1925, R.A.S.E., 1926.) Since his day, his work in that respect for the society has been ably continued successively by Dr. Minett and Professor Dalling. He took as his very first theme the difficult task of analysing the progress then made in our knowledge upon "The Causes of Sterility in Cows," and in the course of masterly criticism exposed the infamous and cruel practices which had resulted from the illusion that it was a widespread disease recognisable as a follicular or granular vaginitis. This had obtained currency following upon the publication in 1901 of a short article by Ostertag in which he claimed to have isolated a particular kind of streptococcus from the vagina of a heifer affected with what he, wrongly, supposed to be this disease. After examining the various other alleged causes which in turn had been adduced to explain the condition, Sir John concluded his classic review with the statement: "The purpose of what precedes has been to explain the current views regarding the causes of sterility, and only one sentence will be devoted to treatment. It is that patience is a virtue, sometimes better rewarded than perseverance."

My second anecdote relates to an occasion which happened only last year, when following the 14th International Veterinary Congress held in London I was invited to write a short review of the proceedings and had access to the papers contributed by the speakers. Having in the meantime summarised progress upon the subject, from a particular aspect or comprehensively, for societies, and thus endeavoured to keep myself well abreast with the progress of current knowledge, I was deeply impressed with the really outstanding merit of the address delivered by our Swedish colleague, Nils Lagerlöf, upon the subject under further discussion here to-day. After receiving from study of that address confirmation of the conclusions that had been slowly forming in my own mind regarding the paramount importance of heredity, and taking into the fullest account also what was known regarding the influence of the environment, whether that be in respect to the well known significance of infection, specific or contaminating, or of improper nutrition, I could not restrain expression of the opinion which I uttered on visiting the Congress headquarters staff. That was that anyone who perpetrated any measures artificially to induce conception, whether by manipulation or by drugs, in cows that were likely to transmit to their offspring characteristics culminating in reproductive failure (a procedure which would lead eventually and inevitably to race extinction), ought henceforth (as with doping) to be arraigned for a criminal offence. (I had in mind too as not irrelevant what had occurred among poultry stocks consequent upon egg-laying trials after the First War, which might have terminated disastrously were it not that experienced breeders had reserved stocks not subjected to that practice.) Thereupon, a conspicuously alert and intelligent member of the staff (Miss Miles) immediately retorted with the observation that my conclusion was not original, for, she said, to her certain knowledge it had already been iterated in substance by one of the speakers at the Congress. Her recollection was that what the man had recommended as proper treatment for sterile cows was to "kill them." I had no evidence of such a recommendation in the reporters' notes, and so a search was made among the scripts actually submitted for publication. Then, indeed, it was discovered that Lagerlöf himself had given expression to a view which was not in effect widely dissimilar from the lady's recollection, but he had not voiced it apparently publicly when speaking at the Congress. Delineating what he thought ought to be the logical trend of action following upon the substantial evidence accumulating

regarding the important part proved to be played now by hereditarily transmissible lethal factors, Lagerlöf felt constrained to recall the resolution proposed by the Belgian veterinarian, Bartholomé, at the conclusion of the discussion on sterility at the eleventh International Veterinary Congress held in London in 1930 (*Proceedings*, **1,** 378). According to Lagerlöf's recollection, Bartholome had said that he could not understand why practitioners were making so much fuss about sterility, for the treatment he had found most effective in practice was quite simple, and then moved the resolution (which is published): "*The Congress, being of opinion that the methods at present employed to combat sterility among milch cows are not efficacious or ought to be improved, recommends the castration of milch cows while still in lactation, as a method of reducing the losses caused by sterility.*"

Though that resolution met with derision among most of the audience at the time and was rejected by "an overwhelming majority," Lagerlöf felt compelled to admit that in districts such as that in which Bartholomé practised, where the common form of sterility was associated with symptoms of nymphomania, linked, as was well known, with cystic ovaries, the appropriate treatment was, in truth, castration. Lagerlöf, indeed, need not have restricted himself to sterility associated with symptoms of nymphomania in endorsing Bartholomé's recommendation. For in other districts, as was well brought into relief by the Toulouse professors, Cuillé and Chelle, as far back as 1932, in their admirable review upon the subject (*Rev. gén. méd. Vét.*, **41,** 525), it is the opposite condition of anoestrus, linked with persistent corpora lutea, which prevails. The one condition we knew to arise from arrest of the oestrus rhythm in a general bodily state of vagotonia and the other from arrest in the alternate state of sympathicotonia. Such arrests would again, it appeared, arise from metabolic disturbances connected with herbage properties known to be dependent on the local telluric conditions. With much reason, however, Lagerlöf inferred that such local peculiarities affected most strikingly the individual females genetically most highly predisposed to suffer constitutional disturbance, the outcome of which was one or other of the above states and those animals in consequence ought to be eliminated.

The connection between heredity and sterility is not easy at first for the human mind to grasp, because the two conditions would seem obviously to cancel each other out. [See, for example, Baur, E., Fischer, E., and Lenz, F. (1931). *Human Heredity*. (Engl. transl.) (London, Allen and Unwin), page 402: ". . . 'To talk about hereditary sterility is, properly speaking, to talk nonsense,' wrote R. Hofstätter, as late as 1926, and manifestly under the influence of a no longer tenable conception of heredity. The actual fact, of course, is that *sterility* (italics are in original) or barrenness can very well be hereditarily determined by recessive heredity factors. . . ." See, also, Miessner and Köser (1934), quoted below.] Already a speaker at this present meeting has referred to embryonic deaths, which, in many cases, are now well known to be caused by genetic lethal factors. So, likewise, in some species, several such factors have been well studied in the growth of the individual itself (the phenotype in genetic language), before it reaches reproductive age, and such factors are obviously of no consequence in race (genotype) survival. It is, however, when they occur hidden (recessives) in the individual, and often too in the male, beyond the onset of reproductive age that they assume real importance. This has been well recognised in some Scandinavian countries for many years, when for their certain detection the practice has sometimes been adopted of trying out a young bull on a few selected females, and thereafter keeping him in reserve till the results are obtained of back-crossing him with his own daughters. [This aspect, it must here be added parenthetically, is not without warning significance in viewing the present policy of setting up on a large scale Artificial Insemination Centres in this country.] For a lucid exposition of this subject those who are interested are commended to a perusal of the small book on genetics written by a former member of Professor Crew's staff, Dr. Grüneberg, who has dealt with it as it applies to mice.

To my mind, proper attack upon such a highly complex subject as sterility demanding both experience and a high standard of scholarship cannot be undertaken until the British schools are well staffed with clinical teachers who combine these qualities. I have already referred to the percipience of the teachers at the eminent Toulouse school which was created specially to give emphasis to teaching upon cattle practice. Other schools have also given a lead, such as the Hanover school under the distinguished long direction of Professor Miessner, who was active in promoting throughout Germany for several years before this last war a Federation for the Study of Breeding Diseases of Livestock [for summary, see Miessner, H., and Köser (1934.) *Proc. 12th Internat. Vet. Congr.*, New York, **2,** 463; Götze, R (1938.) *Proc. 13th Internat. Vet. Congr.*, Zürich, **1,** 193.] The collated reports forthcoming from the widespread activities of that body provided invaluable data from which to derive sound notions concerning the underlying causes of sterility, such as were seldom forthcoming from the impressions of individual private practitioners. Apart altogether from underestimating the importance, in certain circumstances, of infection, the desirability of studying accurately its significance can never be overstressed. In this respect, it is worth recalling, for example, that after the Hanover school had established an ambulatory clinic to deal, among other things, with cases of difficult parturition in the neighbourhood and resorted to measures entailing ordinary precautions against sepsis, the fearful frequency of genuine septic endometritis resulting in sterility among the cows in the locality, through manipulation previously by unskilled hands, disappeared altogether. This incident is quoted particularly because it may be that the Animal Health Trust in its laudable intention to promote a system of local hospitals will be able likewise in some districts to establish its reputation through a similar achievement. Meanwhile, it is of the happiest augury that under the present system governing veterinary education in this country the newly opened Cambridge school has recruited to its staff to take charge of clinical studies our esteemed colleague Mr. Leslie Pugh, who for many years has established a reputation for himself as a sound and enlightened practitioner in country practice and since graduation has schooled himself to collaborate with scientific research workers at the highest levels, with the productive results we all know. We can only wish him success in the lead thus given by one of the oldest universities. For that body, it will be admitted, has made a proper assessment of the qualifications demanded to inspire succeeding generations with the confidence and interest essential to grapple effectively, not only with sterility, but also with the many other complex problems arising out of our intensive systems of domestication of livestock

Mr. R. H. Smythe (Nottingham): In the first place, I fully agree with my friend, Hignett, that infertility in herds is very often associated both with nutrition and with the calcium-phosphorus ratio. I am stressing the whole point because, together with Hignett, I was one of the first to put forward such a hypothesis. Liming is a long-term policy, and whatever we do is not done in a week or a month, but in a good many months, and it is very difficult to say whether any improvement which subsequently we may find in the herd is the result of the term or the policy. As you have heard to-day, and I agree with it, a lack of lime seems to be safer than an excess of lime. We see cattle running on the moors in the place where I came from and they breed very regularly. I would like to take Mr. Hignett to a moorland where the soil is very acid, the phosphorus there is greatly in excess of the calcium, the calcium is markedly deficient, and there is also a shortage of cobalt. I do not know any more successful place for breeding cattle than that. I think the reason is that the cattle are mainly beef-bred, and are not subject to any great lactational strain; they calve when Nature intended them to do so and produce a normal quantity of milk. The calcium-phosphorus ratio, however important it is, is only one of the many factors which tend to tip the scales. The heaviest weight in the whole scale-pan is an overworked and unbalanced anterior pituitary gland. There is a tendency to develop production at the price of impaired fertility.

There is another factor in operation which so far has escaped attention, it may sound ridiculous perhaps, but Mr. Hignett may not think so. The anterior pituitary not only pours out prolactin but it stimulates the output of cortilactin from the adrenal cortex. The adrenal cortex, in addition, produces other hormones and one of these hormones is not an oestrogen but an androgen, a male hormone. It is not outside the bounds of possibility that the degree of lactational stress which is now placed on the heavy dairy cow may increase, not only the output of cortilactin, but also the output of the androgen which may counteract the influence of the former. Such a happening would enable the adrenal gland to act as a safety valve and counter man's efforts to extract the last ounce of milk, and in the same way might interfere with herd fertility.

Breeding dairy cows with the one object of milk production might perhaps in time cause fixation of the lactational tendency with some decrease in the degree of infertility. In other words, the cow is in a state of evolution, and as a result of the increased death-rate among animals which cannot stand up to the lactational stress, we may in time—it may be a thousand years—evolve a species of ruminant more in accordance with our needs, or we may extinguish the whole species

I was rather interested to hear that cattle which are indigenous to an area have a better fertility ratio than cattle imported to that area. Mention, in this respect, was made of the Guernsey cows in Cornwall. I do not know whether that ratio of fertility will con-

tinue to be maintained as I believe that one veterinary surgeon who practised in Cornwall for many years looking after the fertility of Guernsey cows, has now left the district.

One thing is quite certain, that we should hasten this process of evolution as far as possible and evolve a cow which can stand up to this stress. If we killed off our low fertility cows, or castrated our low fertility bulls, instead of attempting to breed from them at the risk of perpetuating their weaknesses, it might help. The defects of the bull are handed down to the heifers. In other words, unsound tissue in the bull's generative organs may affect the corresponding embryological structure in the developing female with resulting infertility at the heifer stage.

I would like to stress the advisability of creating a Committee which would look into this matter of infertility and decide how much we do and how much we do not know. It is certainly time for us to get frank with ourselves—it may not always pay us to get frank with our clients, but we should find out and candidly admit what we do and what we do not know and thus increase our prestige.

Dr. H. G. Lamont (Belfast): Mr. Hignett has referred to some conversation I had with him this morning with particular reference to the diagnosis of Trichomoniasis. This disease is of common occurrence in Ireland both North and South. We have given much thought to the question of diagnosis and the method which we consider to be the best one is the cultural one. Samples of mucus are collected from the vagina in the region of the *os uteri*. We use glass tubes about 14 inches long with an obtuse angle bend about 6 inches from one end. The bore of the tube is about 4 m.m. The glass tube is passed into the vagina, a rubber mouthpiece is attached for suction purposes and some mucus is aspirated into the tube. One has to be careful not to aspirate from an animal coming into oestrus. The glass tubes containing the mucus are plugged at either end, labelled and brought to the laboratory. A small portion of the mucus is dropped into the tube of culture media devised by Kerr and Robertson, various dilutions of penicillin are added and the media is then cultivated. It is examined by "hanging drop" daily for three or four days. This is a simple and most reliable method and can be carried out by a good technician in any laboratory.

The Chairman. I am afraid the next speaker will be the last to take part in the discussion.

Mr. P. S. Hastie (Ashford): I am greatly indebted to Mr. Hignett for his work. He asked me to supply some herds for his survey, and I am afraid the ones I supplied were those giving the most trouble. The results are not conclusive, but in the greater part we have had results by changing our feeding, improving the ratio and increasing the phosphorus intake.

Some speakers have said the stress of lactation will have an effect on fertility. I have been struck on reading the Congress papers and hearing people this morning by the fact that the whole trend of the papers consists of effects of one type of physiological action through the pituitary on some other action. Without stealing from Professor Carlström's paper on acetonaemia, I noticed he said the strain of lactation was really going to reduce the ability to produce the hormones necessary for the adrenals; the point being we had the pituitary body attempting to carry out much more than it was capable of doing. Professor Seekles in his paper of 18 months ago mentioned the same effect; it has been said that the attempt to breed animals with a much bigger anterior pituitary body is all wrong, but to my mind it has been shown that something of that nature is required.

Contrary to that, we have the point that some herds where they breed very high yielding cows have been doing it for years without any trouble with infertility, and the "indigenous" factor has been put forward. I am inclined to believe that these people have collected an indigenous strain for years and at the same time they have watched their feeding and grasslands, etc. Mr. Hignett can show you examples of his records of herds which contain animals bred almost similarly to a neighbour's animals. They had good ancestors and were bought at a price which meant good yielding animals, and simply by one farmer not paying attention to his manurial treatment of the fields he was getting into trouble. During my six years of practice I have found you may rule out pathological infectious diseases of the genitalia but you can still be faced by this lack of tone in the genital tract; it may not have been definitely proved, but it is certainly influenced by feeding. If we, in my part of the world, were to castrate or slaughter every animal that fails to breed, I with my two assistants would eventually be out of work.

With regard to Mr. Gould's points, I should like to see his figures of CaO, P_2O_5 intake, as distinct from soil condition or mineral content, because without them I do not think his arguments will stand up against Mr. Hignett's.

Professor A. N. Worden (Huntingdon), who was unable to be present, forwarded the following contribution to the discussion, though time did not allow of its presentation at the meeting: I apologise for my absence from this important paper and trust that time will permit of my lending support to one who has worked for so many years towards the elucidation of extremely complex practical problems.

It is inevitable, I think, that Hignett's views upon mineral balance will result in controversy, and one is reminded of the arguments advanced for and against the "Erdalkali-alkalizität" hypothesis. As Hignett himself well realises, the calcium-phosphorus ratio is not regarded in quite the same way as it was a few years back and there are many who would prefer to discuss excess of calcium in the presence of inadequate amounts of phosphorus or, for that matter, inadequate amounts of manganese, iodine and other minor elements whose availability seems to be linked with the amount of calcium present. To go back to one of Hignett's early findings, the effect of heavy liming upon bovine fertility, I am sure there are many of us who can recall practical examples to support it. Indeed, I would go further and suggest that lactation as well as reproduction can be profoundly affected in this way. The Ayrshire herd to which I referred at the N.V.M.A. Grassland Conference was a case in point. The animals themselves were fat and thriving but their lactation curves were often abbreviated and in almost all instances highly unsatisfactory.

The theoretical explanations of the findings before us to-day are probably of less interest than the practical implications and the methods to be adopted to combat these increasing prevalent disturbances to bovine metabolism, and I would suggest that Hignett has given us a very definite lead in tackling certain types at least of impaired herd fertility. In the case of correction of low-phosphorus diets the matter is not, unfortunately, too simple because in many cases the raw materials required for the devising of suitable "prescription mineral mixtures" are not freely available to the firms concerned.

Hignett has drawn attention to the great change in the picture of herd infertility that has occurred over the past 15 years in Great Britain, and it is clear from his remarks that the plough-up policy and all that that entailed is closely connected therewith. I would suggest that another major agricultural change is similarly linked with the changing picture of herd infertility. I refer to the winter milk bonus and the consequent widespread attempts to produce autumn calvers. The very important studies carried out by my former associate at Aberystwyth, Richard Phillips, and his colleagues have indicated the seasonal variations that occur in calving rates and in milk sales in different areas and have mapped out his findings on a climatological and geographical basis. It seems abundantly clear from his work that, taking the whole bovine population and not samples as a basis, the ability of cows to calve during the autumn months, and therefore to conceive during the winter months of December to March, is largely influenced by climatic factors. The year by year change in different counties from 1940 onwards suggests that the ability of farmers to get their cows into calf during these critical months was largely determined by external factors of the kind that Phillips has discussed. It is extremely interesting to note that, in the first area studied in detail by Phillips, *i.e.*, the three counties of West Wales, relatively successful winter conception took place west of, and relatively unsuccessful winter conception east of, the 42° F. January isotherm. To quote Phillips and Davies (*J. Dairy Res.* (1949.) **16,** 1-13): "The temperature of 42° F. which appears to delimit the area of relatively successful winter mating is generally taken as the vital temperature for the growth of grass. In the western areas cattle are kept out of doors for much longer periods than they are in the east. They obtain a greater supply of green food and are exposed more to both daylight and sunshine."

The link between mineral metabolism and the endocrine system has, of course, been stressed for many years by Green at Weybridge and Hignett's findings, and those from Aberystwyth to which I have referred, do in my opinion lend support to a concept of seasonal rhythm in which bovines during the winter are at a low ebb owing to the running out of reserves of some vital substances, having a direct or indirect effect upon the endocrine system, that they normally derive from good pasture. As a corollary to this, it would appear that the modern pasture does not always provide the right balance of itself. As those who attended the Grassland Conference are aware, a search is at present being made for oestrogens and other substances in pasture that may have a direct effect upon the animal's endocrine system. These developments are of extreme interest, but in the meantime attention might well be paid to some alternative forms of hormonal therapy at the critical time of the year when conception is required for successful autumn calving and when many types of metabolic disorder and

wastage generally are most serious, and when the nutritional value of the milk, in terms of S.N.F. and the presence of certain vitamins, is at its lowest. If time permits, I should like Mr. Hignett to give his views upon whole pituitary therapy.

There are two other isolated points that call for comment. First, reference is made to vitamin E, and from recent American studies (Krukovsky, V. N., *et al.* (1949.) *J. Dairy Sci.*, **32,** 196-201), it would seem as if lowered intake of the tocopherols during winter may be associated with greater susceptibility of the milk to the development of oxidized flavours. The other point concerns *Vibrio foetus*. This organism has recently been recognised as a human pathogen and can, indeed, cause abortion in women (*Lancet*. (1950.) **258,** 1120-1121). Although the mode of infection of the human subject is unknown, it is obviously a finding of considerable importance to veterinarians.

In conclusion, I should like to congratulate Mr. Hignett upon his painstaking research and to express the hope that he will not only carry it on for many years but will also see fit to publish more frequently and more copiously. Even the results that he has presented to-day are not as complete as those that some of us have been privileged to see, and I believe that he would dispel a good deal of adverse criticism by giving us more detailed presentations of his extremely valuable findings

The Reply

Mr. Hignett: I would like to thank not only the openers of the discussion but all the people who have been up to this rostrum either to support my views or criticise them. I have been most interested in everything that has been said; the contributions made by all these people have been extremely valuable. I would particularly like to thank Mr. Smith and the speakers who said complimentary things about the paper.

Mr. Smith said some of these breeding problems cleared up as the result of the healing processes of Nature. What exactly is meant by that? To me it seems that time can either lead to the animal acquiring a tolerance to an infection, or enable the animal to throw off the infection; or improvement will occur in time due to climatic changes or to some unobserved change in nutrition. I do not want to ride a hobby-horse, but we have done an enormous amount of work on this question of calcium and phosphorus contents of feeding stuffs, and we have followed herds and breeding problems where no treatment has been undertaken and an improvement in the breeding records has followed automatically. We have frequently found during the winter months it is associated with a change from one stack of hay to another with a marked difference in calcium and phosphorus contents. If the farmer is feeding large quantities of hay, the difference in the chemical composition of that in two stacks can have a marked effect on the actual calcium and phosphorus intake of the cattle in the herd. Similarly the same thing can happen by moving cattle around from one field to another. I remember the case of a herd on the Cotswolds; it was found that the heifers would only breed on one particular field during the summer months; of all the fields on the farm this was the only one which had reasonable amounts of both soil phosphate and soil potash. The amount of soil calcium of all the fields on the farm was extremely high. I just give these examples because as already stated in some cases this so-called healing influence of Nature is possibly due to some unobserved change in nutrition.

Mr. Smith has dealt with the effect of winter milk production on the herd fertility problem, and in some parts of the country that is a true bill. We must all accept the evidence put before us by Phillips, a most painstaking investigator. On the other hand, I have what I consider to be extremely reliable information from Mr. Smith's namesake, the Veterinary Manager of the Beccles Centre, which suggests that the winter milk production in his area has no bearing on the herd fertility problem.

Messrs. Smith and Phillips have been working in Wales where there is a very much higher rainfall than in East Anglia where the other Smith has made his observations. It is just possible that as the result of the low rainfall in East Anglia, the cattle during the summer are on a ration with a relatively high calcium and low phosphorus content, and when they are getting additional concentrates in the winter they reap the benefit of an increase in phosphorus intake. Thus in the Beccles area there is no difference between the fertility rate of herds producing summer milk as compared with that of herds producing winter milk.

As I had hoped, Mr. Smith did deal with the question of the time allowed to elapse between calving and service. I would draw attention to a very good paper published fairly recently by James in New Zealand in which he goes very fully into this subject. His figures show that a rest of about 60 days between calving and first service will enable the herd to acquire quite a high conception rate. This view is supported by Mr. Joseph Edwards, of the Milk Marketing Board, whose observations indicated that a rest of 60 to 90 days is required for a high conception rate.

Mr. Steele-Bodger asked me what I deduce from Table II as far as the use of Strain 19 is concerned. It is true that a higher percentage of cows in the group with the poor breeding record have been vaccinated than is the case in the group with the good breeding record. It may be, of course, that vaccination with Strain 19 vaccine has led to some impairment of fertility, but I cannot accept that explanation in view of observations in a large number of herds. I think this is another pointer to the fact that herds with poor breeding records tend to belong to progressive farmers, whereas herds with good breeding records tend to belong to non-progressive farmers. The first group have their cows vaccinated against contagious abortion; only a small percentage of those in the second group take this precaution.

I was extremely grateful to Mr. Alastair Greig for his most interesting information about the mouse experiments. His criticism of the jump in my deductions was quite legitimate, but it was largely due to the drastic cutting down of the paper. I tried to say that if there is a negative phosphorus balance, there is a withdrawal of phosphorus from the bony structures, but in view of the fact that phosphorus is not as mobile as we have been led to believe, there is not only a withdrawal of phosphorus from the bony structures, but also from other tissues. This withdrawal is likely to affect the actively functioning structures. We can certainly class the anterior pituitary as one of the most highly functional organs in the body. That was roughly the line of argument I attempted to pursue.

Dr. J. T. Edwards rightly said that the type of work in which I have been engaged during the last ten years does not lead to tangible results. There is not a great deal one can publish, and one spends a good deal of time coping with pit-falls. At the most we can only hope to contribute some very small amount of knowledge which will some day be useful to other workers in this field.

Dr. Edwards must be thanked for his extremely interesting contribution, but as far as putting over his views to the farmer are concerned, I leave that to the practising veterinary surgeons.

The first point raised by Mr. Gould was this question of *Vibrio foetus* infection, and did I think it was a venereal disease? As far as cattle are concerned I do not know enough about it, but I do remember that in the case of sheep M'Fadyean and Stockman showed that infection could be acquired by the oral route. That being so, I imagine the same could be true for cattle. A most interesting and important point has been raised. Mr. Gould talked about the question of liming, and wondered whether we are correct in saying that you should not put on more than 2 tons of lime in any one year. It depends very largely on what you mean by 2 tons of lime. In the paper we refer to 2 tons of carbonate of lime, or its equivalent. A lot of people use chalk. It depends on the actual form in which the lime is applied. I agree with Mr. Gould it is not a very heavy application of lime, and possibly it would not matter half as much if the farmer liming heavily also attended to the phosphate and potash requirements at the same time. This is merely an impression which I have gained in connection with my everylay farming activities. On the other hand if a farmer puts on 8 tons of lime to the acre, there is every likelihood he has lost all sense of proportion, and the chances are he is only thinking in terms of lime. It is all a question of balance. With regard to individual animals which have a breeding history similar to that which we have associated with the herd breeding problem, I think Mr. Gould is quite right. We tried to explain in our paper that animals possibly have a genetical make-up which renders them particularly susceptible to nutritional imbalance.

Mr. Smythe dealt with the question of lactational stress, and all of us who are interested in animal health must be conscious of its importance. Mr. Hastie also dealt with that same subject. I was very pleased to hear the theory of adrenal androgens playing a part in this infertility story. Mr. Smythe thought the suggestion might be considered ridiculous, but this problem is so complex that no horest suggestion is ridiculous. I think Mr. Smythe will derive a lot of benefit and encouragement from reading a fairly recent publication by Garm in which he has dealt with the subject on which Mr. Smythe touched.

I have to thank Dr. Lamont for the valuable information concerning the diagnosis of trichomoniasis.

Finally, I would thank Mr. Hastie for his support.

I am now speaking to those particularly interested in this question of nutrition and its influence on reproduction. Earlier on I said I would try to explain what we meant when we spoke of the importance of the calcium-phosphorus ratio being largely determined by the phosphorus intake.

XUM

(Mr. Hignett amplified the point by a blackboard illustration.)

I would like to show you three or four slides so that you know something of the information we are collecting and which encourages us to continue work along these lines. (Applause.)

. . . . .

The following replies have been received from Mr. Hignett to the contributions (published, but not read) by (a) Mr. Deas, (b) Professor Worden:

(a) I would like to thank Mr. Deas for his initial complimentary remarks.

He seems to think that we attach undue importance to the calcium-phosphorus ratio. As I took pains to explain in my introductory remarks, the ratio is important only when the phosphorus intake is little in excess of minimum requirements, as it so often is with many of our dairy cattle. It is then that a marked deviation from the $CaO:P_2O_5$ ratio of 1:1 might lead to trouble. If Mr. Deas had studied the calcium and phosphorus intakes of dairy cows in this country he would, we are sure, be surprised at the very high percentage of animals on a diet with a narrow ratio.

Mr. Deas has repeated what was said in the paper regarding the part played by phosphorus. We made it clear that, at this stage of our knowledge, it would be foolhardiness to pay attention only to those factors thought to have a direct effect on the reproductive mechanism. If it is true that a deficiency of phosphorus leads indirectly to poor breeding efficiency, either through interfering with palatability and food intake, or in some other way, we must attribute due importance to this phosphorus deficiency.

He refers to intensively farmed pastures and to heavy liming and slagging but these are not informative words unless we know more about climatic conditions and soil lime, phosphate and potash requirements, etc. All interested in this subject know that very many factors can affect calcium and phosphorus contents of pasture herbage.

We would congratulate Mr. Deas on his description of *V. foetus* infection. He gives a most excellent clinical picture of the disease as we know it. We do envy Mr Deas in his ability to reduce bovine infertility almost to one factor, *i.e.*, *V. foetus*. Remembering the importance which, in the past, was attached to Brucellosis and later to Trichomoniasis, we wonder if Mr. Deas will find the solution of the *V. foetus* problem will leave him with a great deal of bovine infertility on his hands. We would like to feel assured that the disease is a true venereal disease. Some problems which clinically are indistinguishable from *V. foetus* infection have been encountered in herds in which no animal has been introduced from another farm for many years. In these cases it can be deduced that the syndrome is due to factors other than *V. foetus*, or to *V. foetus* which is not a true venereal disease, or to *V. foetus* lying dormant in a herd for some considerable time before a factor or factors enable the organism to cause a breeding problem. That we attach great importance to this problem is evident from the amount of space we devoted to it in a paper which attempted to deal with most of the factors influencing herd infertility and also from the introductory remarks. However, we are forced to the conclusion that *V. foetus* does not account for the whole or anything like the whole of the bovine infertility problem.

We have admitted that in some ways the symptoms associated with a calcium-phosphorus imbalance are similar to those associated with *V. foetus* infection and, in our opinion, there was little justification for Mr. Deas repeating the point which we ourselves made as an argument against our views, *i.e.*, if the calcium-phosphorus ratio is narrowed when the animals have acquired a tolerance to *V. foetus*, a rapid improvement might wrongly be attributed to the narrowing of the ratio. We contend that ovarian changes which are sometimes associated with conditioned phosphorus deficiency would in many cases enable a competent clinician to differentiate between this condition and *V foetus* infection.

We are somewhat startled by Mr. Deas' admission that even three or four years ago Trichomoniasis was being diagnosed on clinical grounds. We had, obviously quite wrongly, thought that such dangerous deductions had been abandoned by workers experienced in this field a very long time ago.

(b) I would like to thank Professor Worden very sincerely for his kind remarks and most valuable contribution.

I am afraid that in the space available I cannot deal adequately with whole pituitary therapy.

The CHAIRMAN: I would like to say in Mr. Hignett's presence how deeply indebted we have been to him this morning for giving us such an excellent paper, and for his splendid reply to the discussion. I am sure you would not like to go away without recording a hearty vote of thanks to Mr. Hignett. (Continued applause.)

THE DEMONSTRATIONS

The practical demonstration of veterinary work must always rank as a major feature of our Congresses and in the event the demonstrational programme invariably proves amongst the most popular, provided the items are selected with a view to their current appeal and also that the arrangements made are such as to allow a fair field for operator and onlooker alike. In regard to the former aspect, it was good to see that the sub-committee of the Provisional Committee responsible for this particular programme held the conviction—and had the courage to act upon it—that soundness in the horse still merits a place as an attraction side by side with another old favourite in teat surgery and with the demonstration of developments in the field of anaesthesia. In some instances activities were simultaneous and so presented a problem to those desirous of seeing everything but unwilling to forfeit a good place in the ring on the off-chance of a peripheral glimpse elsewhere, but all were sincerely grateful to the Medical Superintendent of Whitchurch Hospital for the use of such suitable sites on the Monday and Tuesday afternoons, and to the Farm Manager who took immense pains to perfect the arrangements.

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The Examination of Horses for Soundness

(BRIGADIER S. W. PEATT, O.B.E., F.R.C.V.S.)

Congress papers and demonstrations are usually expected to put over new ideas, display the latest methods and discuss up-to-date veterinary science. The Provisional Committee did well to include a " re-issue " of an old feature. No doubt it is a sign of the times that Brigadier Peatt's show was as well attended as any of the outside demonstrations. It was noticeable that not all the spectators were recent graduates and the interest shown by all present indicates that this very old art, the examination of a horse for soundness, was one about which many veterinary surgeons still wished to learn new facts or compare procedure and technique. The demand for veterinary examinations for soundness might not now be so great as in the past but the necessity for accuracy and balanced judgment is still as great—the writer would say greater, with good horses fetching the prices they do now.

Brigadier Peatt gave us a demonstration of quiet and slick efficiency. He issued a précis of his method in lieu of a running commentary so that his actions could be followed without interruption. He stressed the importance of sticking to a set method of procedure both to prevent missing some point and also to give a good impression of methodical work. He preferred the definition of soundness propounded by MacGregor :—

" A sound horse is one which possesses no detectable defect or abnormality congenital or acquired, liable to interfere with usefulness."

The Brigadier proceeded to examine one horse starting in the stable and then with it standing still on a level surface in a good light, attempting to spot any abnormality which would indicate unsoundness without further ado, *e.g.*, broken wind. The opportunity was here taken to ask the owner if he could guarantee it free from vice. The horse was then walked and trotted and attention was paid to turning for indications of stringhalt, inco-ordination, etc., as well as for ordinary lameness.

An examination of heart and eyes followed, the method of

using stethoscope and ophthalmoscope being shown. Then to mouth, head and so on down neck, limbs and trunk.

Back again to a more detailed examination of the horse at " close turning " and backing, when the animal was now ready for " wind " testing. It was fortunate that the specimen used was a good example of a roarer and this could be plainly heard as it was galloped past the spectators. A sound horse was then galloped and the comparison made. With pulse and respirations now accelerated, further examination was made for heart unsoundness and broken wind. Next the horse was " grunted." While the horses were rested for the half hour before trotting out again for further tests for lameness the Brigadier took the opportunity of mentioning the finer points of roaring and whistling differential diagnosis, then went on to mention comparative points for heavy horse examination. His talk was concluded with several hints as to technique such as the need for quiet and unhurried examination ; the extra tests for stud horses and the advisability of seeing a stallion at work and ascertaining whether mares were in foal ; the old adage of old horses with clean limbs and the wise precaution of letting a groom take the buck out of a horse before galloping it oneself ; the importance of accurate description and careful recording of all unsoundnesses, the assessment of the importance of which being explained in a letter in " plain " language (accompanying the official certificate) to the owner.

The Brigadier commented on the necessity for more work being done on the horse's heart, especially in race-horses and hunters, and expressed the hope that the experiments now being made by the Animal Health Trust Research Station would provide definite data on this matter. Much as we would have liked to discuss the importance of the many unsoundnesses possible to find, time did not permit. Indeed, the Committee must have realised this when they decided to make it a demonstration on technique and not a paper on unsoundness. However, many people took the opportunity to query the Brigadier both privately and openly and he was kept very busy answering questions.

Brigadier Peatt is to be complimented for putting over an interesting and instructive display and the Committee on their choice of subject and demonstrator.

H. J. Whitlock & Sons, Ltd., Cardiff.

WOMEN MEMBERS AT THE DEMONSTRATIONS.

Teat Surgery

(J. W. Burgess, M.R.C.V.S.)

This demonstration, on the Tuesday afternoon, was given by Mr. J. W. Burgess, M.R.C.V.S., of the Royal (Dick) Veterinary College, Edinburgh.

To commence with, a knowledge of the anatomy of the teat was stressed. The variations in size and shape were demonstrated and the structure, skin, connective tissue, disposition of the muscle, and the great differences in number and formation of the folds of the lining membrane pointed out.

The necessity for the application of proper restraint was emphasised, and in prolonged or in delicate operations casting of the patient was advised. The difficulty of proper anaesthesia was mentioned and the need for asepsis stressed, despite the availability of antibiotics. A brief reference was then made to the advances made in teat surgery in recent years, and from here the demonstrator went on to deal with the various surgical conditions. Contusions were dealt with firstly, with particular reference to the common form met with on the apex of the teat; in order to obviate the use of milking tubes, bougies, etc., the demonstrator claimed good results from the use of Hall's or McLean's knife. This treatment is supplemented with penicillin ointment.

Wounds involving both part and whole thickness of the teat wall were dealt with and suturing recommended in both cases. Interlacing mattress sutures of nylon are used.

In dealing with teat obstructions, the demonstrator stressed the importance of using Hudson's teat instrument as a dilator and not as an extractor of these growths. No cutting instruments should be used, and no attempt made to remove by incising the teat wall.

Black spot was dealt with by means of Hall's knife and the usual dissection method in dealing with teat fistulae was mentioned. The demonstrator believes that a proportion of these fistulae are the still patent teat ducts of amputated supernumerary teats.

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Chloral Hydrate Narcosis in the Bovine

(C. Formston, assisted by L. C. Vaughan)

The subject provided was a Friesian heifer weighing, approximately, 8 cwt. (400 kg.).

A sterile solution consisting of chloral hydrate 2 oz. (60 g.), sodium citrate 6 g. and water 700 ml. in a litre flask was introduced into the right jugular vein by gravity, using a "simplex" apparatus, the animal standing.

After the introduction of, approximately, 300 ml. the heifer became unsteady on her feet and was given support. She sank slowly to the ground with a further 100 ml. On recumbency a stage of deep narcosis bordering on light anaesthesia was reached, when a total of 500 ml. (approximately 43 g. of chloral hydrate) had been administered.

The time taken for the induction was four and a half minutes. At this stage the tongue was protruded, tail relaxed, skin sensation lost, palpebral reflex absent, but the corneal reflex was actively present.

Twenty minutes later the heifer was able to raise its head, but was unable to stand until one hour later. The dangers of regurgitation were emphasised, and it was mentioned that where time allowed before surgical interferences, deprivation of water almost entirely eliminated the possibility of regurgitation.

Regional Anaesthesia in the Bovine

(C. Formston, assisted by L. C. Vaughan)

Dissection specimens for the purpose of illustrating cornual nerve block and paravertebral nerve block were exhibited, showing the distribution of the various nerves in each case. Methods and techniques of blocking off these nerves were discussed, together with their surgical indications. It is intended that these two items be described in detail and submitted as a separate communication for publication in *The Veterinary Record*.

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General Anaesthesia in Small Animals, and a Method of Positive Pressure Ventilation of the Lungs

(G. C. Knight, F.R.C.V.S., and

C. R. Wood, M.R.C.V.S., D.V.S.M. (Vict.))

On Monday, September 4th, Mr. C. R. Wood and Mr. G. C. Knight demonstrated an apparatus designed to facilitate thoracotomy by providing interrupted positive pressure respiration. Dogs' lungs were used for the purpose and the apparatus was operated to show the control of tide volume and frequency.

This was followed by the induction of anaesthesia in two dogs using thiopentone intravenously. In one case anaesthesia was continued by the intratracheal insufflation of oxygen and ether vapour using a Boyle's apparatus and subsequently a new type of vaporiser designed by the demonstrators and made by Mr. Wood. In the other case anaesthesia was continued by the use of a semi-closed circuit method, the apparatus employed consisting of a vaporiser, flowmeter, valve mechanism and cuffed intratracheal tube. This apparatus was also designed by the demonstrators and made by Mr. Wood.

Mr. Knight emphasised the importance of intubation in preventing air blockage and accidental asphyxia in anaesthetised small animals and some of the advantages of administering anaesthetic vapour mixtures intratracheally.

The Boyle's apparatus and accessories were very kindly provided by Messrs. Arnold & Sons, and other materials by the Abbott Laboratories, Ltd., and Pharmaceutical Specialities (M. & B.), Ltd. The demonstration was made possible in the well-suited lecture room of the Whitchurch Hospital by the kind permission of the Medical Superintendent and the most helpful and interested co-operation of the hospital staff.

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Regional Anaesthesia in Small Animals

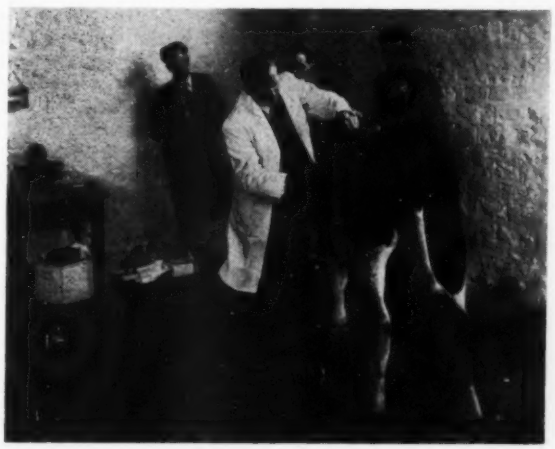
(J. S. A. Spreull, Ph.D. (Edin.), M.R.C.V.S.)

Following those given by Messrs. Knight and Wood, Dr. J. S. A. Spreull, M.R.C.V.S., gave demonstrations on regional anaesthesia in small animals, spinal anaesthesia being the main feature. Regional anaesthesia by infra-orbital and inferior alveolar nerve block was demonstrated as was the technique of infiltration to give anaesthesia of the digit.

The approach to the spinal canal by the lumbo-sacral interarcuate space was shown on skeleton, on X-ray film and on live dogs and cats. The nature of the injection practised by the demonstrator was shown by X-ray film to be spinal (into the subarachnoid space) and not to be epidural as is commonly supposed.

DEMONSTRATIONS AT WHITCHURCH

General View.



H. J. Whitlock & Sons, Ltd., Cardiff.

(L) Professor C. Formston, (R) Mr. W. T. Harrow in Action

The procedure in effecting the injection was demonstrated and it presented no inherent difficulty.

The merits of spinal anaesthesia were considered under the following headings: Toxicity, ability to be controlled, efficiency, side effects and cost.

The very wide margin of safety with S.N.B. compared with the very narrow margins of nembutal and pentothal was shown by graphs from actual records.

The ability to be controlled and the efficiency of the anaesthesia was shown by producing varying degrees of anaesthesia in cats and dogs by varying the strength of the anaesthetic injected.

Spinal anaesthesia, it was claimed, was singularly free from unpleasant sequelae and its cost was very considerably below that of nembutal or pentothal.

It was confidently claimed that within its limits (all operations caudal to the diaphragm) S.A. with the technique and dosage described had great advantages. The immense field of its possible use was indicated and the restrictions to its full use imposed by the Animals' Anaesthetics Act were deplored.

The technique of effecting regional anaesthesia by infra-orbital and inferior alveolar N.B. was demonstrated with the aid of specimens. Some remarks were made regarding the extraction of teeth. The value and use of a root gouge was demonstrated.

The various planes that require to be infiltrated in order to effect digital nerve block were described; the technique was demonstrated on a labrador pup.

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Demonstrations of "Anavenol" K

(W. T. HARROW, M.R.C.V.S.)

A demonstration was given by Mr. W. T. Harrow (Wilmslow) of the use of "Anavenol" K as an anaesthetic in cattle. In his introductory remarks, Mr. Harrow referred to work recently published in *The Veterinary Record* (**62.** 507), and stated that in the course of some 80 anaesthesias in cattle he had reached the conclusion that "Anavenol" K was a highly effective agent for this purpose. He stressed that "Anavenol" alone, as discussed by Parry at the International Veterinary Congress, was not suitable for cattle but that the addition of 2½ per cent. of thialbarbituric acid ("Kemithal") removed this disadvantage. Thus, while "Anavenol" K may be used in both horses and cattle, and also in the pig, "Anavenol" alone should be confined to horses.

In discussing apparatus it was pointed out that provided positive pressure is employed, any of the well-known forms of injection may be used. Syringes of large capacity are, however, preferable to some extent in that they facilitate the exact regulation of the volume injected.

The importance of the rate of injection was emphasised, and members of the Congress were reminded that this rate is approximately 0·1 c.c. per second per cwt., or, more simply, 1 c.c. per second for the average subject. If this rate is grossly exceeded there is danger of respiratory embarrassment, and if it is not maintained the animal may not become anaesthetised.

The subject was a Friesian cow of approximately 11 cwt. bodyweight and the injection of 120 c.c. over a period of two minutes resulted in the animal falling to the ground in a state of light anaesthesia. It was then demonstrated that the base of the horn was insensitive and that dehorning was possible with a single dose of the anaesthetic. The quietness and ease of induction were pointed out and it was suggested that a single injection of "Anavenol" might well be used as a means of restraint, even when general anaesthesia was not necessarily called for. Indications in this category included the thorough examination and dressing of the bovine foot, minor teat surgery, removal of foreign bodies from the eye, etc.

A maintenance dose of "Anavenol" K was then given and this consisted of 65 c.c. injected in the same number of seconds. After this it was shown that the skin reflexes which had persisted after the first injection were abolished, and that it was possible at this stage to proceed with major abdominal surgery.

Mr. Harrow outlined his procedure for caesarean section in which he sterilised the operation site and pinned on the cloths before giving the first maintenance dose. He said that after this second dose had been given he proceeded to open the abdomen and the uterus and to extract the calf. In the majority of cases a second maintenance dose was usually necessary at this stage and it generally gave sufficient anaesthesia for the abdomen to be closed. In his experience the operation took about 70 minutes and the cow was usually sitting up some ten minutes later. The cow usually rose to her feet within an hour of the completion of the operation.

In reply to a question as to whether "Anavenol" K had a curare-like action, it was stated that there was good pharmacological evidence that this was not so. In any case the drug did not affect the muscles concerned in respiration and this was one obvious piece of evidence that the drug did not resemble curare. Also in the course of the experimental work on "Anavenol" K a number of animals had been anaesthetised on many occasions and they showed no apprehension following the operation. It was thought that had they felt pain under the influence of the drug they would definitely have been apprehensive of subsequent occasions.

During the course of the short discussion, the cow was allowed to recover from the anaesthetic and this occurred quietly following the normal pattern. The cow first raised her head and assumed a sitting position and after a few minutes rose to her feet without difficulty.

An opportunity occurred later in the Congress, by the courtesy of Mr. David Llewellyn, M.R.C.V.S., of Cardiff, to demonstrate to a small number of members of the Congress the actual use of "Anavenol" K in a caesarean operation. The subject was a young Friesian heifer weighing about 7 cwt. which had "stolen the bull" and was unable to deliver a particularly large calf. In this instance the animal was recumbent and the injection was continued until it was judged that a sufficient depth of anaesthesia had been achieved. 110 c.c. of "Anavenol" K were given in as many seconds and the case was unusual in that this provided adequate anaesthesia for the whole operation. Some skin reflexes were present when the first incision was made, but these disappeared rapidly and were completely absent when the wound was closed some 50 minutes later. At this time the animal was beginning to show the first signs of recovery and was even beginning to raise her head but the skin remained completely insensitive.

Owing to the unavoidable absence of Mr. E. O. Longley, Mr. Harrow gave a second demonstration at Whitchurch, this time on the use of "Anavenol" K in the horse. It was unfortunate that the subject was extremely apprehensive and because of this induction was not as smooth as had been the case with the cow on the previous day. Owing to the accidental breaking of the head collar during induction, the horse fell heavily and served to point the demonstrator's warning that it was essential to pull the horse forward at the time of its going down. As in the cow, injection was carried out at the rate of 1 c.c. per second, but owing to the nervous condition

THE SOCIAL EVENTS

Whatever other features of the 1950 Congress of the Association may fade from memory, there will be retained an abiding recollection of the dignity of its setting, the welcoming enthusiasm of the Lord Mayor, Alderman George Williams, and the friendly atmosphere of the whole occasion, in creating which his fellow citizens played so large a part. This all-pervading spirit was initiated very happily at the South Wales Division's "At Home," when the Association was welcomed by the President and Mr. Hall, while the civic authorities rose nobly to the occasion and supplemented the successful efforts of the Provisional Committee to ensure that, throughout their stay, none would lack all the entertainment that either the amenities of Cardiff or a well-planned programme of enjoyment could provide.

We trust the accounts which follow will reflect the pleasure afforded by the social events which filled each evening of the week. While the weather did its worst to spoil the outdoor programme, only one item, the ladies' trip to Porthcawl, was reduced to a watery oblivion outside the coach. The succeeding day's venture—for such it was—to the Wye Valley, via Newport, Chepstow and Tintern, provided undiluted enjoyment of the lovely unfolding views, culminating in the sheer delight of the abbey ruins, standing majestically in the sunlight. The place of a set excursion for the general company was taken most agreeably on the Thursday afternoon by a visit to Barry Island as the guests of Mr. and Mrs. Hall. A large and welcome group of youngsters helped to make up a strong party, who variously relished the refreshing breeze at Barry Point, indulged in a thorough laze on the strand, or savoured the attractions of Pat Collins' Pleasure Park, of which they were given the freedom. Advantage also was taken of the kind invitation of the Barry Athletic Club to conduct a bowls competition. The whole party were the appreciative guests of Mr. and Mrs. Hall at a most substantial tea, following which the President voiced their thanks not only to the hosts who had entertained them so generously and afforded them so thoroughly enjoyable an afternoon, but as an informal preliminary gesture, to the South Wales Division, of which Mr. Hall is President, for the warmth of their welcome to the Association and the splendid efficiency of the arrangements made for the Congress in their midst.

The South Wales Division's "At Home"

No Congress could have been accorded a more enjoyable "send off" than that which was given by the host society at the Park Hotel on the Sunday evening, when the large attendance of early comers to the conference provided a good augury for the whole week.

The members, ladies and visitors were received with great cordiality by the President of the South Wales Division, Mr. R. W. Hall, of Barry, and Mrs. Hall, and after a pleasant hour of mutual welcomings and generous refreshment, a move was made to the Assembly Hall, where the privilege of hearing something of the best that the "land of song" can show its guests was afforded the company by a select group of concert artistes from the Welsh National Opera Company.

A delightful evening having been brought to a close by the "welcoming" song, the President of the Association, Mr. Bruford, expressed the gratitude of the "National" to the local society, not only for its hospitality and memorable musical entertainment, but for the wholehearted manner in which it had thrown itself into the preliminary work of arranging for Congress. When the City's invitation was accepted the Association knew that it could rely on the enthusiastic support of the South Wales Veterinary Association, and it had been given in full measure. If he might venture to mention one name, in particular, Mr. Hughes's contacts with the City Council had been invaluable; it was not easy to run a congress where there was no veterinary school, but that happy occasion had given them every assurance of a successful week.

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The Civic Reception

In common with our President's reception, that accorded to our Association by the civic dignitaries of the host municipality ranks very high amongst the social features of the "National" year. Outstanding amongst these, without doubt, was the function held in the magnificent chambers of Cardiff City Hall on the evening of Monday, September 4th.

The several hundred guests were received by the Lord Mayor, Alderman George Williams, and his daughter, the

South Wales Echo, Cardiff.

THE LORD MAYOR RECEIVES.

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of the animal it was necessary to administer more than would normally be necessary to cast the animal and bring about the first stage of anaesthesia. When the horse was down a maintenance dose was given, again showing the depth to which anaesthesia could be carried for purposes of major surgery. It was pointed out that the limbs were completely relaxed and that it was possible to move between the unrestrained limbs without danger. Recovery was fairly rapid but owing to the large induction dose which had been necessary there was some evidence of "barbiturate hangover" as described by Parry (*Vet. Rec.* (1950.) **62**. 506.

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Medical Films

While the demonstrations were in progress at Whitchurch, a small company was finding pleasurable instruction in the showing of three admirable films from the Film Library of Imperial Chemical Industries, Ltd. The subjects illustrated by the films were: "Operative Shock," "The Cerebral Cortex of the Monkey" and "Control of Infection in Surgical Dressings."

XUM

South Wales Echo, Cardiff.

THE "SNOWFLAKES" SING.

South Wales Echo, Cardiff.

CHARACTERISTIC OF THE PRESIDENT, MRS. BRUFORD AND THE LORD MAYOR.

ASSEMBLY ROOM, CITY HALL

By courtesy of Messrs. Ed. J. Burrow & Co., Ltd., Publishers, Cheltenham.

Lady Mayoress, Mrs. Mary Camrose Evans. Moving into the spacious ballroom, the company were agreeably surprised to find assembled the large youth section of the Snowflakes Cardiff Choir, Royal National and International winners, who gave a most refreshing and impressive demonstration of their fine qualities in solo and concerted singing, under their conductress, Miss Eva Novello Williams, with Miss Marion Williams as pianist and Madame Gwen Williams as musical director.

Dancing—modern and "old-time"—was then enjoyed until midnight by an increasingly hilarious assembly, to the music of the "Locarnos," an accomplished group of instrumentalists. It should be added that the N.V.M.A., who were most hospitably entertained, were honoured also by the presence of the Deputy Lord Mayor, Alderman George Ferrier.

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The President's Reception

At one of our receptions—admittedly much enjoyed—the guests were provided with a set programme. The absence of any such direction to felicity perhaps furnishes the key to the supreme pleasure derived by every participant from the President's reception and dance at the Park Hotel on the evening of Tuesday, September 5th. In the atmosphere of informality which, indeed, Mr. and Mrs. Bruford so happily created around them throughout the week, a large assembly of members, their ladies and visitors took advantage of this opportunity to give expression, by their presence, to their sense of appreciation of the self-sacrificing labours of the Head of the Association on its behalf. Having received their guests, the President and his lady entertained them most hospitably. Social joviality and dancing continued with zest until a late hour.

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Ladies' Guild Dance

Once again this year the Ladies' Guild organised a dance, the proceeds of which were as usual to be given to the Victoria Veterinary Benevolent Fund. The arrangements on this occasion were in the hands of the South Wales Ladies' Congress Committee under the chairmanship of Mrs. R. W. Hall, of Barry, and no small thanks are due to these ladies for a very pleasurable and successful evening. The dance was well attended and, during the evening, the opportunity was taken to raffle gifts made to the Guild for this purpose so that yet more money could be collected for the Fund. There were also one or two prize dances and the golf cups were presented by Mrs. Hill-Owens, President of the Ladies' Guild—the Dunkin Trophy to Mrs. Alexander Pottie, of Paisley, the winner of the ladies' competition; and the Simpson Trophy to Mr. George Gould, of Southampton, the winner of the men's competition.

The beginning of the evening was marked for some by a small representative dinner party given by Mrs. Hill-Owens and attended by some of the officers of the Guild and their husbands, by the then President, N.V.M.A., and Mrs. Bruford, by the Lord Mayor and Lady Mayoress of Cardiff and others. The evening closed with cheers for Mr. and Mrs. Bruford and for Mrs. Hill-Owens, followed by the singing—as only the Welsh can sing—of "Land of Our Fathers." It was the last social function of the Cardiff Congress, 1950—an ending with a very happy note and yet another example of kindly Welsh hospitality.

THE ANNUAL DINNER

The Annual Dinner of the Association was held at the Park Hotel, Cardiff, on Wednesday, September 6th, 1950, with the President, Mr. J. W. Bruford, M.R.C.V.S., in the chair. Prior to taking their seats the members and their ladies, together with other guests, were received by the President and Mrs. Bruford.

Those seated with the President and his lady at the top table included the following:—

The Lord Mayor of Cardiff, Alderman George Williams, C.B.E., J.P., and his daughter, Mrs. Evans, the Lady Mayoress; Alderman James Griffiths (Chairman, Cardiff Corporation Health Committee); Provost Ralph Picken (Dean of the Medical Faculty, University of South Wales); Dr. A. Harvey (Principal, Cardiff Technical College); Dr. T. J. Hennelly (Medical Superintendent, Whitchurch Mental Hospital); Mr. R. W. Hall (President, South Wales Veterinary Association) and Mrs. Hall; Mr. J. Morgan Jones (Welsh Secretary, Ministry of Agriculture); Professor T. Dalling (Chief Veterinary Officer, Ministry of Agriculture and President of the Royal College of Veterinary Surgeons); Mr. R. Bolton (Chairman, Farmers' Club); Mr. J. W. Salter Chalker (National Farmers' Union); Brigadier J. J. Plunkett (Director, Army Veterinary and Remount Services); Professor and Mrs. Birger Carlström (Sweden); Dr. and Mrs. A. B. Crawford (U.S.A.); Mr. and Mrs. Gjesdal (Norway); Mr. S. F. J. Hodgman (President-Elect); Dr. R. F. Montgomerie (Senior Vice-President) and Mrs. Montgomerie; Mr. H. E. Bywater (Hon. Treasurer) and Mrs. Bywater; Mr. J. R. Barker, and Professor and Mrs. Geo. H. Wooldridge.

"The City of Cardiff"

Following the honouring of the Loyal Toasts, Dr. R. F. MONTGOMERIE, Senior Vice-President, rose to propose "The City of Cardiff." At the conclusion of three years as an officer of the Association, said Dr. Montgomerie, he had reason to know its members as a body of most generous people, always ready to show appreciation of recognition of their National Association and courtesies and entertainment extended to them. Those members who attended their Annual Congress were a representative cross-section of the profession and they would wish him, in proposing that toast, to do justice to their feeling of satisfaction in the way they had been received and entertained in Cardiff. Yet, their known level of intolerance, something which not uncommonly went with generosity, precluded the possibility of his doing justice to his subject; they just could not stand the first speech of the evening occupying more than its allotted time. (Laughter.) Just to say "Thank you," however, would be a very inadequate expression of the feelings of the President and members of the Association towards the City of Cardiff and its Lord Mayor.

Cardiff was undoubtedly proving itself an ideal setting for their Congress. Its Civic Fathers had provided splendid accommodation for the Congress meetings and the Lord Mayor had arranged a right royal entertainment in the magnificent Assembly Hall of the Council.

While the veterinary surgeons of this country found most of their pleasures in the things of Nature, they were, he was sure, just as ready as was any other professional body to appreciate the beauties of a city which obviously had given so much attention to the planning and erection of a comprehensive Civic Centre second to none. As a native of the Island of Bute, he was proud to think that the majestic castle, the "show-piece" of the Civic Centre, had been presented to the city by a Scot—and, be it noted, as an outright gift to the city! A search into the dim and distant past of the family of the Marquis of Bute had not yielded any evidence of what brought him to Cardiff. He understood, however, that Cardiff was once the centre of large smuggling activities. Was it this which attracted the Scots to that city? They had a reputation for seeking their fortune among the innocent Sassenachs; he felt that there must have been some special attraction which made some of them risk their future by coming among brother Celts! (Laughter.)

But Cardiff had not been content with the glories of the past. They had seen their Civic Centre, the National Museum of Wales, their Temple of Peace and Health, their famous Cathedral of Llandaff and those attractive University Buildings in Cathays Park. Perhaps, above all, they had appreciated the facilities of their Technical College and the courtesy of its Principal and staff. (Applause.)

The parks and open spaces lent an air of peace and quiet to a city whose commercial life was a busy one. But, were all the parks of Cardiff characterised by peace and quiet? Those of them, and perhaps particularly the President, who knew Cardiff Arms Park, could only associate it with the fervour of a Welsh Rugby crowd.

The Lord Mayor had mentioned the depression period when a quarter of a million Welshmen had crossed over the border into England. If depression caused Celtic people to leave their countries, Scotland must have been depressed for a very long time. Cardiff was very closely associated with coal, iron, steel and export; the industries on which, together with agriculture, the life of this country so much depended, and Cardiff's citizens deserved great praise for their efforts towards making Britain a more happy and prosperous land to live in. They saw the dark clouds around them and dreaded their nearer approach, but in the marrying of the interests of the countryside with those of our town dwellers they felt a level of confidence and hope in the future. It did them good to rub shoulders and they felt that their decision, as representatives of the countryside, to spend those few days in that great industrial city was indeed a wise one. The City of Cardiff had been the perfect host and the Lord Mayor might be assured that they were thoroughly enjoying all that hospitality.

It was indeed a great honour to be elected Lord Mayor of the City of Cardiff. Someone had whispered to him that the Lord Mayor was not a native of Cardiff, but that his long services to the city of his adoption—and he believed his membership of the Council extended back to 1928—had made him a very acceptable person to all his constituents. He knew that feeling of elation when one was elected to guide and represent one's fellows, and he was sure that among all the services the Lord Mayor had given to Cardiff and to South Wales he had found none more pleasant, despite its being onerous, than that which he was now rendering to the city. It struck him, when he made a few enquiries, that the Lord Mayor was not unlike the average veterinary surgeon in one respect, for he understood that he had no need to look beyond his civic and business interests to find the pleasures of life. They wished him a happy and productive period of office.

His fellow members of the Association would acclaim that toast with much enthusiasm, wishing to show their full appreciation of the kindness and courtesy of the City of Cardiff and of its Lord Mayor. (Loud applause.)

Responding to the toast, THE LORD MAYOR OF CARDIFF, Alderman George Williams, C.B.E., J.P., caused much amusement by relating that when he left school he had to make a choice between entering industry or becoming a

" Vet "; he had said, " No, I will get an honest living." Other references to the profession and to the remarks of Dr. Montgomerie were greatly enjoyed.

On the subject of the early history of the city, the Lord Mayor said the predecessor of the present Marquis of Bute had risked every penny he had in building the first docks in Cardiff, which had laid the foundations of their important export and import trade. A hundred years ago Cardiff had a population of a thousand people, and, given normal international conditions, he believed that within the next 25 years Cardiff would become one of the wonder cities of the world.

The city was greatly honoured by the visit of the Congress which he hoped would be profitable to its members and beneficial to the nation; a visit to the outskirts of the city, particularly the lovely Caerphilly Mountains, would make the visit still more worth while.

Concluding, the Lord Mayor thanked Dr. Montgomerie for his references to Cardiff and to himself, and the members for the way in which they had received the toast, and expressed the hope that they would soon visit the city again.

" The National Veterinary Medical Association "

The toast of " The National Veterinary Medical Association " was proposed by Mr. R. Bolton (Chairman of the Farmers' Club), who said that he set a high value upon the privilege which had been accorded him of proposing that toast, because it gave him the opportunity to do two things.

First, as Chairman of the Farmers' Club, it allowed him to pay a tribute to the family of their own President. (Applause.) The President's father, Mr. Robert Bruford, was Chairman of their Club in 1936. He was a leader in agriculture in and out of Parliament and the Club gained much by the very many years during which he was a member and by his committee activities which he gave unstintingly. The President had followed him as a leader in the profession which was tied so closely to agriculture, and he was very happy indeed to be there that night in his official capacity at the Club during his term of office. The Club was once described by a President of the Board of Agriculture as the chief medium of adult agricultural education in the country, and they remained to-day with the Royal Agricultural Society of England, the only non-political national organisation in farming. They valued highly the close association they enjoyed with their profession through those of their members who were members of the Club. (Hear, hear.)

Second, he was given the opportunity of saying a few brief words on agriculture. Before he did that he should make it quite clear on what ground he stood. Although he had a big interest in agriculture he was not what was usually called a " bread and butter " farmer, but primarily a cattle food manufacturer. There was a bond, therefore, between them, inasmuch as both were servicing the industry, his hearers professionally and they as traders, but both of them depending on the progress of science and research the better to do their jobs, and it was on this last thought that he wanted to say a few words.

He was not forgetting that they asked him there that night from the Farmers' Club, and they might feel that he had no right to bring in his trade interests. The reason he did so was because he saw as the real partners of our agricultural industry those partners of the trio—the farmer, the veterinarian and the ancillary trader. He had never quite made up his mind where the Government came in—and whether they made it a four-ball—they just left it, that like the poor they were always with them.

What of the future of agriculture in this country? He was one of those who believed that it was reasonably possible to work a long-term policy of economic production, whilst at the same time preserving the land in a state of high fertility which must increasingly be one of the main defences of this country. But he did emphasise economic production, partly because it was feasible and because he did not believe that in normal times the public would stand for over-long the need, one way or the other, to pay higher prices for home-produced food than for imported; or to pay subsidies—not so much to the farmer because that was largely a myth—but subsidies on food which could and should be produced here in larger quantities and in better quality and at less cost.

They had already heard some rumblings, although these might have been silenced for a while by Lord de la Warr's stern warnings of the submarine menace which we might have to face.

The cryptic phrase of the 1947 Agriculture Act referred to that part of the nation's food which it was desirable to produce at home as being that part which would be encouraged by market and price guarantee. It could mean so much or so little, but he suggested that if the community was to pay in some way for this guarantee which was so necessary to long-term farm planning, then at least it had the right to demand that the goods should in fact be produced in increasing quantities at reasonable prices and of the best quality, because it was on this that the higher standard of living depended, and surely this was the only permanent key which would turn to the ultimate safeguard of our agricultural industry.

He thought it was very necessary to give the public better information of the importance of home agriculture, and he commended to them the valuable work which was being done in that direction by the Association of Agriculture.

But he was quite certain the industry could never maintain true economy until, amongst other things, the losses through avoidable disease were removed. (Hear, hear.) They all knew the figures, and they were not peculiar only to this country, but perhaps more than any we had peculiar conditions which would not stand this cost.

In the endeavours of his own section, the veterinarian was their close ally. If by their skill they could assist the farmer to rear nine pigs to the litter instead of eight; if they could solve the problems of sterility and help promote the means of producing better and safer milk and continue, as they were doing, to avoid the heavy losses from mastitis and allied troubles; if they would persist urgently towards the conquest of fowl paralysis, then they would be dealing with some of the real problems of increased productivity. On their side, if, as one example by the application of nutritional knowledge, they could bring a pig to maturity in six instead of in seven months, they increased labour productivity by 14½ per cent., of the land and of the buildings by a similar percentage, whilst the saving on the food bill was higher still.

It was only by the employment of scientific principles that they would all succeed in servicing agriculture as efficiently as she must be serviced, and it was here that their profession and their ancillary traders—the manufacturers of feeding stuffs, machinery and fertilisers, the seedsmen, the distributors and so on—played such important rôles.

and where collaboration and understanding were so necessary, because each was a spoke of the wheel, and failure of one frittered away the endeavours of the others and failed to win the confidence of the farmer, without which they worked in vain.

He was developing no policy—but just look at the opportunity! Fresh milk was the only food we produced at 100 per cent. of our consumption, but when it was said that we were near the limit of the market, let them reflect that only 6 per cent. of our butter and 15 per cent. of our cheese were home produced. We could increase considerably our 44 per cent. of meat output; that would be more difficult, but had we ever developed our very valuable grasslands as they could be developed to produce more meat? It looked as if the long-term policy and that development of our marginal lands had been shut in the deep freeze with the imported meat. Even before the war 75 per cent. of our bacon was imported. We supplied only 13 per cent. of our eggs, 44 per cent. of our fruit and so on. There was a vast opportunity indeed.

Their own profession had deserved well. It had always amazed him how the veterinarian coped with his job, never knowing whether his next patient would be an elephant or a canary. (Laughter.) He was most impressed with the rapidity with which they faced new problems and developments, but he suggested that the breadth of their work emphasised the need for ever further development. It was not for him to tell them their job, but he did see things from several angles, and he had felt for a long while that there must develop a body of veterinary specialists and consultants, a more widespread laboratory service and, may be, a well-equipped hospital service all designed to reinforce the practitioner and allow him to maintain that independence so necessary to the professional man.

That was something which he prayed might be left to their own profession to develop in its own way, and in this connection he would like to say how happy he had been to be connected with the Animal Health Trust, because he believed it was an independent organisation capable of doing great work for the profession, which should be supported by the profession, by the farmer and by the traders, together with all others who had interests in livestock of one kind or another. (Applause.)

In conclusion—and of the most importance—he wanted to pay a tribute to their own Association. He knew it was based upon a high percentage membership of the profession, and could rightly claim to speak for the profession. It was very circumspect in its contacts throughout and in its relationship with farmers; such an organisation was essential to-day, and the course of their work was so easily seen when we observed the growth of science on the farm in the last 20 years. The average farmer could not be a scientist—a while back he did not "hold with it"; to-day he realised its value to him and was prepared to pay a fair price for the service it gave him; their Association was the spearhead by which proper control and encouragement was developed throughout their profession. Never before had relations between farmer and veterinarian been better and more friendly. (Applause.) The farmer appreciated that nine out of ten members of their profession were abreast of the times.

The great work of the past, which he knew would be continued, was due in no small measure to the sacrifice and unstinted labours of a long line of Presidents, of whom he ventured to suggest they had such a worthy follower in their Chairman that day. (Hear, hear.)

It had been a great pleasure to come there—he thanked them most sincerely for asking him and asked them to rise and drink to the health of the National Veterinary Medical Association of Great Britain and Ireland, coupled with the name of their President, Mr. John Bruford.

Responding, the President of the Association, Mr. J. W. BRUFORD, M.R.C.V.S., who was accorded an ovation, said, though his own contribution to the speeches might not rise to the level of those previously enjoyed, it would at least be short.

He was very grateful to Mr. Bolton for his kind references to himself and his family. His father, having had two sons, neither of whom looked like doing any work at all —(laughter)—and hoping that they would not quarrel, had decided one should become a farmer and the other a veterinary surgeon. While content with that decision, occasionally he felt the urge to shed the responsibilities of veterinary practice and follow the less exacting art. They all admired the revolution which had taken place in agriculture, and were very proud of their own part in it.

The proposer of the toast had emphasised the need for economy in production; the object of the Association in the past decade had been to endeavour to reduce the appalling wastage due to disease and bad husbandry. It was clear that progressive farming would make use of veterinary science more and more, and the necessity for close collaboration between the research worker and the practising veterinary surgeon could not be too strongly stressed; anything which would short-circuit or prejudice that confidence was to be deplored.

Increasing Government facilities for education would in due time benefit the profession, but as a short-term policy conditions must be created which would attract to it men of initiative and zeal, and veterinarians were entitled to a reasonably happy and contented life. He was sure members would not spare themselves in their efforts to save animal life, human foodstuffs, and the suffering arising from animal disease and mismanagement. (Applause.)

In conclusion, the President thanked the Chairman of the Farmers' Club most sincerely for the kind way in which he had proposed the toast.

"Our Guests"

In proposing the toast of "Our Guests," Mr. S. F. J. HODGMAN, M.R.C.V.S. (President-Elect), said that he felt it a great privilege and honour to be entrusted with the task. They were greatly honoured by the presence of the Lord Mayor of Cardiff and the Lady Mayoress; Professor Dalling, the President of the Royal College of Veterinary Surgeons; Mr. Bolton, the Chairman of the Farmers' Club; Brigadier Plunkett representing the Royal Army Veterinary Corps; and from Sweden—Professor Carlström and his charming lady. Mr. Hodgman would have liked to mention many other distinguished visitors, both from home and overseas, who had honoured the dinner by their presence, but his time was strictly limited. He would like to extend a special greeting to the ladies, without whose presence their enjoyment could not be complete.

As a tribute to Wales, the speaker quoted:—

"Still the walls of Harlech stand,
Frowning over mead and strand,
Still the ancient songs are heard,
Heroes to the fight have stirred.
Still the old enchantment clings
To the ruined Hall of Kings;
Still amid her hills and dales
Throbs the unconquered heart of Wales."

ALDERMAN JAMES GRIFFITHS, J.P. (Chairman of the Health Committee of the City of Cardiff), replying to the toast, entertained the company with many amusing anecdoes, chiefly connected with his sea-faring experiences, and his old salt's humour and breezy manner were greatly enjoyed.

He hoped all the members of the Association had spent a pleasant time in the beautiful City of Cardiff and its surroundings, and, on behalf of all the guests, thanked the Association for its kind hospitality.

Bowls and Golf Competitions

On September 7th, at Barry Island, a triple game was played between members of the Barry Athletic Bowling Club and Professor G. H. Wooldridge, Dr. W. Hughes and Mr. R. W. Hall. Owing to lack of time only 19 ends could be played, when the Athletic triples led by four shots.

On the adjoining rink, a "scratch" triples game was formed in which Professor Carlstrom, Dr. R. Montgomerie, Mr. J. Campbell Hill, a veterinary surgeon from New Zealand, Mrs. Bruford and Mrs. Montgomerie participated.

In furnishing the above information Mr. Hall writes: "What the result of the latter game was I am not able to say, but I do know that they enjoyed themselves immensely. I hope this will be the forerunner of other bowling competitions during future Congresses. During the same afternoon members and their families were able to partake of free entertainment at the Barry Island Amusement Park and Scenic Railway through the generosity of Mr. John Collins, the proprietor."

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The golfing competitions held during the Congress week were keenly contested on the championship course of Rogerstone Newport.

The Simpson Cup was retained by Mr. George Gould, of Southampton, with a score of 76. The Dunkin Cup was won by Mrs. Pottie, of Paisley, who also handed in a good card.

PIG CLUB SUPPORT FOR A.H.T. RESEARCH

Addressing the recent Pig Club Congress of the Small Pig Keepers' Council, Dr. W. R. Wooldridge, Scientific Director of the Animal Health Trust, thanked the member clubs of the movement who had, up to date, subscribed over £230 towards pig research under the Trust. The money has been subscribed in response to an appeal made earlier this year by Mr. Cedric Drewe, M.P., Chairman of the S.P.K.C. "This money," said Dr. Wooldridge, "has already been allocated towards the expenses of a young graduate who, under Trust auspices, is working on pig disease at Cambridge University. Disease costs the pig industry of this country £5,500,000 a year. Independent research can, of course, make a specially valuable contribution to the fight against the ravages of disease in our farm livestock."

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NOMENCLATURE OF VIRUSES

At the plenary session on August 24th of the Fifth International Congress of Microbiology at Rio de Janeiro it was recommended that consideration of the starting date for scientific nomenclature of viruses be deferred to the next congress. Further, the Judicial Commission of the congress was of opinion that until studies on viruses now in progress have advanced further, the use of any comprehensive system of scientific nomenclature for them is unwise. The co-operation of all virologists is requested in assisting the sub-committee now studying the nomenclature and classification of viruses. The object of these resolutions is to encourage study of the taxonomy and nomenclature of viruses, but to discourage use at the present time of what are considered premature attempts to create comprehensive systems of classification and nomenclature. The Chairman of the Virus Sub-committee of the International Nomenclature Committee is Dr. C. H. Andrewes, National Institute for Medical Research, The Ridgeway, Mill Hill, London, N.W.7.—*Nature*.

THE VETERINARY EXHIBITION

This year's exhibition of drugs, instruments and appliances was staged in two series of rooms above and below the Assembly Hall at the Cardiff Technical College. While those representatives of the commercial houses, who serve the profession so well, accommodated upstairs and so adjacent to the Secretary's office, came off the better, yet there was easy access to all the stands, which attained a high standard of display, and throughout the week the exhibition provided a popular rendezvous for members when they were not engaged in sessional activities.

The exhibition was opened officially by the President of the Association (Mr. J. W. Bruford), accompanied by Mrs. Bruford, in the entrance hall of the College, following the civic welcome on the morning of Monday, September 4th.

The PRESIDENT: It is a very great pleasure to me on behalf of the Association to welcome the Exhibition of Drugs and Surgical Instruments. We are very happy always to see this exhibition at our Congress. I think I may say it is one of the main attractions. We are always very grateful to those manufacturers and distributors who do so much by putting before us all the new and wonderful things with which we may try to make our work more efficient. I think you will agree with me when you have been round the exhibition that it is indeed a place where you can profitably spend a great deal of time and sometimes a lot of money. (Laughter.)

I propose now to tour the exhibition, but I would remind you that the paper by Mr. Hignett will be discussed in the main hall punctually at 11.15.

Mr. V. J. SPALDING (Willows Francis Pharmaceutical Products Ltd.): We, the standholders, are always very happy to see you. Most of us spend quite a lot of our time trying to catch you at one place or another, and we are indeed thankful to see you to-day. Thank you, Mr. President, for your very kind remarks. I have great pleasure in presenting this bouquet to your good lady, Mrs. Bruford (presentation of a bouquet of pink carnations was then made amid applause).

Breaking away from custom, we have decided that perhaps something a little more permanent would be appreciated, so on this occasion, on behalf of the standholders, I have great pleasure in presenting this vase to you also (a handsome cut-glass vase was then presented to Mrs. Bruford).

Mrs. BRUFORD: I think you have had enough speeches, or will have had by the end of the week, so I will only say thank you very much indeed; I am most grateful. (Applause.)

(The President and Mrs. Bruford then toured the exhibition.)

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The Stands

The stand of ARNOLD & SONS, 54, Wigmore Street, London, W.1, covered a most comprehensive range of veterinary instruments. Perhaps those of greatest interest were the automatic hypodermic syringe for controlled inoculations of variable quantities, intramedullary pinning equipment, the new Mose embryotome, stainless steel bull rings, Ravedin's needles, Gillies needle holders.

The Boyle's anaesthetic apparatus, specially adapted for small animals, was used by Mr. Gordon Knight in his demonstration of small-animal anaesthesia.

The difficulties in production have largely been overcome, and nearly all veterinary instruments are now available, usually in stainless steel.

Artificial insemination equipment, as usual, received special attention, and both Rowson's & Dowling's catheters for the extraction of fertilised ova from the living cow were available, and also the new semen diluting fluid "Bufol."

It may be of interest to veterinary surgeons in Scotland and Ireland to know that branches of Arnold & Sons have been opened at 130, George Street, Edinburgh, and 44, Kildare Street, Dublin.

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Bailliere, Tindall & Cox, publishers and booksellers, of 7 and 8, Henrietta Street, London, W.C.2, displayed a full range of their veterinary books. These included the new fourth edition of "Dollar's Veterinary Surgery," edited by Professor J. J. O'Connor (price 35s.) and thoroughly revised to incorporate the most recent advances (particularly in the fields of anaesthetics, antibiotics and chemotherapy, and the treatment of fractures by "internal fixation"), and the third edition of "Anthony's Diseases of the Pig and its Husbandry" (17s. 6d.), which has now come to be regarded as the standard book on the subject in this country.

Much interest was displayed in a specimen copy of the forthcoming second edition of "Benesch and Wright's Veterinary Obstetrics" (ready November, probably 50s.). This book has been expanded to more than double the size of the previous edition and is, in effect, an entirely new work. The vivid illustrations excited much favourable comment and are a notable feature of what will be an extremely popular book.

Advance information was given of the sixth edition of "Banham's Veterinary Posology," edited by Alistair Greig, M.R.C.V.S., and the second edition of "Kirk's Index of Treatment in Small-Animal Practice," both of which are expected at the end of the year.

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Bayer Products, Ltd., Africa House, Kingsway, London, W.C.2, exhibited a large selection of chemical and biological products. As at previous exhibitions the products were grouped largely according to the diseases for which they are employed. The groups which attracted most attention were designated vitamins, hormones, distemper and chorea, skin diseases, anthelmintics and latest introductions. Amongst the last-mentioned were preparations incorporating trace elements, a remedy for the external treatment of alopecia, and a molecular combination of iodine and a sulphonamide for which the main indication is the treatment of *B. coli* infections of the alimentary tract.

"Amphotropin," which has recently been found a most useful weapon in combating hard-pad disease in dogs, aroused special interest

A bilingual sign (English and Welsh) suspended over the exhibits emphasised the firm's ethical selling policy, and bilingual cards giving particulars of some of the Bayer specialities were distributed at the stand.

Western Mail & Echo, Cardiff.

Official Opening of the Exhibition.

L-R: Dr. Montgomerie (Senior Vice-President), Mrs. Bruford, Mr. Bruford (President), Mr. Hodgman (President-Elect.)

The "Churn stand" exhibit of British Glues & Chemicals, Ltd., Imperial House, Kingsway, London, W.C.2, featured the full range of protective mineral supplements specially compounded to meet the needs of each class of farm stock. These high bone, flour-high phosphorous mixtures are given as follows:—

Churn 101. Promotes growth and lamb crop; maintains general health. Prevents swayback or warfa and pining.

Churn 102.—A special high magnesium supplement. Assists in preventing staggers or Hereford disease.

Churn 103.—Promotes growth, feathering and egg laying, prevents perosis and rickets.

Churn 104.—Promotes health, growth, and reproduction, assisting in the control of anaemia, stunted growth, and weak litters.

Churn 105.—For milk production and healthy calves; prevents infertility by maintaining a suitable calcium-phosphorus balance.

Churn 106.—Ensures good work output, fertility and strong healthy foals.

This display also included a prominent reference to the calcium and phosphorus contents of farm foods, carrying a topical note with emphasis on the importance of an adequate phosphorus intake and close calcium-phosphorus ratio. Full details were given of the new higher phosphorus mixtures—fortified with trace elements, which have been prepared to meet nutritional infertility in cattle.

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On the stand of Burroughs Wellcome & Co., 183-193, Euston Road, London, N.W.1, the centre-piece, consisting of a diagrammatic representation of a cow, illustrated the source and actions of sex hormones in the cow. Explanatory notes and descriptions of the various sex hormone products were given, particular attention being drawn to the new "Tabloid" brand Progesterone for implantation. Intended for those cases in the cow in which, due to luteal deficiency, pregnancy terminates with abortion or resorption of the foetus at an early stage, "Tabloid" Progesterone consists of a sterile, compressed 50 mgm. products ready for implantation.

The return of the "Agla" range of hypodermic needles was given prominence in a rotating model, featured in the foreground of the stand. Precision-built, the "Agla," it is claimed, enjoys a sound reputation as the highest grade of hypodermic needle available.

The other panels were devoted to "New Small-Animal Products" and to "Penicillin Preparations in Veterinary Practice." The first of these included "Banocide" brand diethylcarbamazine and "Wellcome" brand canicola vaccine; the second, "Distaquaine" brand suspension and "Wellcome" penicillin intramammary injections.

"Banocide" is a highly efficient and well-tolerated anthelmintic for the treatment of roundworms in kittens and puppies. "Wellcome" leptospira canicola vaccine is intended for active immunisation against *L. canicola* infection, now recognised as the cause of much of the acute and subacute nephritis in the dog. "Distaquaine" suspension, an aqueous suspension of procaine penicillin G for intramuscular injection, enables constant blood levels of penicillin to be maintained; the drug is realeased slowly from the injection site. "Wellcome" penicillin intramammary injections need no introduction. First of their type to be used, they have consistently led by reason of their neatness, accuracy, choice of strengths and leak-proof nature.

For this Congress Burroughs Wellcome & Co. had prepared a special folder, copies of which were available on the stand. The outer cover illustrated the famous legend of Gelert, the Welsh hound, while inside were descriptions of places of interest within reach of Cardiff.

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Chappie, Ltd., Trading Estate, Slough, Blucks. This stand featured a simple display of the following four well-known products: Chappie in its dehydrated form, Chappie "meat loaf" in tins, Lassie Dog Food and Kit-E-Kat the balanced cat food. Many veterinary surgeons were interested in the chemical analysis of each of these products, which was prominently displayed and which afforded scientific proof of their value as opposed to mere claims of "high nutritional content."

Chappie, Ltd., stated that the main purpose of their stand was to contact the veterinary profession in person, to thank them for their part in the evolution of these four products. All of them have been the subject of intensive laboratory research, but each formula has also been pre-tested in practice by members of the veterinary profession. Their co-operation has been of great help to the firm—a fact which it wishes to acknowledge.

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On the stand of Evans Medical Supplies, Ltd., Speke, Liverpool, 19, was displayed a new product, which may prove to be of considerable interest to veterinary surgeons, in Rondase (hyaluronidase—Evans). Rondase is a freeze-dried preparation of purified hyaluronidase of mammalian testes.

The function of hyaluronidase is to dissolve the cementing mucoid substance of connective tissue. It thus acts as a spreading factor by modifying the permeability of the connective tissue and is used for promoting the absorption of subcutaneously injected fluids.

Also newly introduced were the "Distaquaine"* procaine penicillin preparations. A special veterinary pack of Distaquaine suspension will shortly be available in cartons containing a vial of three mega units.

Amongst other products shown were Zant—a reliable antiseptic; Pirevan—the specific for redwater; penicillin preparations for mastitis and a range of well-known biological preparations.

The attention of veterinary surgeons was drawn to Evans established policy of restricting the sale of most of their veterinary biological preparations to veterinary surgeons or against prescriptions issued by veterinary surgeons.

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W. Gimber & Sons, Ltd., 2, Queen's Road, Peckham, London, S.E 15, again showed a very interesting display of instruments and sundries. As could be seen from the stand, the veterinary surgeon can obtain from this house all his requirements except drugs, including name plates, stationery and surgery furniture.

Particular interest was shown in the new "Surgulatic" electric steriliser available at £12 12s. and the Gillies pattern combined needle holder and scissors at £2 5s. 6d.

The directors would like to take this opportunity of thanking the members of the N.V.M.A. for the interest taken in their display and look forward to meeting their many friends once again at the N.V.M.A. Congress of 1951.

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Glaxo Laboratories, Ltd., Greenford, Middlesex, presented three veterinary products for use in the treatment of bovine mastitis: penicillin veterinary cerate Glaxo, procaine penicillin G veterinary cerate Glaxo, and dihydrostreptomycin veterinary cerate Glaxo.

Each tube of penicillin veterinary cerate Glaxo contains a single dose of 100,000 units of penicillin (calcium salt). The penicillin is presented in a non-irritant base of arachis oil with 4·5 per cent. white beeswax; this secures a steady and prolonged action of penicillin in the udder.

Procaine penicillin G veterinary cerate Glaxo, it is claimed, represents a very substantial advance in the treatment of bovine mastitis. It presents penicillin in adequate dosage and in a base designed to secure prolonged action. This ensures maximum bacteriological (not merely clinical) cure and more permanent control of the disease can be secured with the greatest convenience to the veterinary surgeon and minimum disturbance of the animals.

Investigations have shown that streptomycin is a valuable drug in treating bovine mastitis associated with infections which have proved difficult to eradicate with penicillin. Dihydrostreptomycin veterinary cerate Glaxo has been introduced as an efficient and convenient form of application. Streptomycin treatment is complementary to penicillin and is not intended to replace it. All three products are supplied in single-dose tubes to minimise the risk of cross-infections between quarters.

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* Registered trade mark of the Distillers Company (Biochemicals) Ltd.

Messrs. C. J. Hewlett & Son, Ltd., 35-43, Charlotte Road, London, E.C.2, exhibited a varied selection of their speciality products, which included their veterinary injections, calcium borogluconate P., P-M and P-M-D, also solutions of dextrose and magnesium.

Packings of their penicillin sulphadimidine intramammary injection in boxes of six tubes were given prominence, likewise Anaesco, Sarcogen, Verileen tablets and Hewsol cationic cream.

Two sizes of teat bougies in new aseptic packings were on view and among cattle drenches were included their tins of stimulating drinks containing six powders.

Sodium fluoride was shown packed in cartons of three dozen 1 drachm powders and in the range of tablets for use in small-animal practice, chelidonium compound and co-cerevisiae tablets were to the fore.

Surgical instruments were represented by the McLintock Preset syringe for tuberculin testing and the neo-injector for the administration of calcium boro-gluconate and other solutions. Instruments used in the McLintock technique of rumenotomy were shown for the first time and these included a clamp of new design for facilitating stitching of the rumen prior to its being returned into the peritoneum.

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Imperial Chemical (Pharmaceuticals) Limited, Fulshaw Hall, Wilmslow, Manchester, exhibited a comprehensive range of products, already well known to the veterinary profession, together with a number of new products which were presented for the first time. Amongst the latter was "Anavenol" K—an improved form of "Anavenol" which was introduced at last year's XIVth International Veterinary Congress as an anaesthetic for the horse. The new form includes "Kemithal" in the formulation and is designed to extend the use of this anaesthetic to other species, especially cattle. The particular advantages and technique of administration of "Anavenol" K were the subject of a practical demonstration at the Congress. "Kemithal" itself, the value of which is already well established in medical practice, was also introduced as a safe and reliable anaesthetic for use in the dog and other small animals.

"Antrycide," already recognised as an important advance in the treatment of animal trypanosomiasis, was featured to draw attention to the two forms now available: "Antrycide" methyl sulphate for curative treatment and "Antrycide" pro salt for prophylaxis. An injection of "Antrycide" pro salt provides immunity over a period of at least three months against the great majority of trypanosomes.

Several other valuable remedies were also on view, including "Sulphamezathine," the highly effective all-purpose sulphonamide, invaluable in the treatment of many infections. The sodium salt, which is available as a sterile 33⅓ per cent. solution for injection, is specially indicated in the single dose treatment of foot-rot in cattle. Good results have also been obtained by administering this solution intravenously in the treatment of acute bovine mastitis and actinobacillosis. Products which have proved valuable in the control of bovine mastitis included "Cetavlon" concentrate M.C. and "Cetavlon" udder cream. These convenient formulations of this well-known bactericide and cleansing agent, it is stated, offer a safe and efficient means of preventing the spread of mastitis organisms via milkers' hands, sores and cuts on the cow's udder and teats, etc. Penicillin "Avdet" teat bougies, "Udolac" and "Udolac" with penicillin provide a choice of preparations for dealing with outbreaks of the disease.

"Lorexane" and "Tetmosol" preparations received their due recognition as reliable remedies in the treatment of mange and the well-known products "Phenovis" (phenothiazine), "Babesan" for bovine redwater and "Avlothane" (hexachloroethane) were also presented.

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International Serum Co., Ltd., 41, Sunningfields Road, Hendon, London, N.W.4, exhibited on their stand their products comprising sera and vaccines produced in their laboratory at Mill Hill, such as preparations for the prophylaxis or treatment of abortion in cattle, blackleg, braxy, canine and feline distemper, haemorrhagic septicaemia, joint ill, lamb dysentery and pulpy kidney, mastitis, staphylococcus and streptococcus infections, swine erysipelas and swine fever, tetanus and white scour, furthermore their *penicillium* products, vivicillin, pennotin and vivipenin. There was also some display of syringes, stilboestrol, pregnant mare's serum and penicillin.

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Minsal Limited, Victoria Works, Wincham, Northwich, Cheshire, the well-known manufacturers of mineral supplements for all classes of livestock, making their first appearance at a veterinary congress, displayed exhibits of great topical interest, in view of the emphasis placed on bovine infertility and acetonaemia.

These consisted of:—

(1) A trace element concentrate composed of manganese sulphate and copper sulphate, which, in conjunction with KI tablets (also shown), provided a method of treating bovine infertility of the type arising from nutritional disturbance.

It would appear that very good results have been obtained by such treatment.

(2) Cobalt sulphate tablets for use in acetonaemia.

The usefulness of cobalt therapy in this condition has recently been emphasised by O'Moore, *et al.* (*Irish Veterinary Journal* of March, 1950).

It is hoped that the tablets will provide a prophylactic treatment for the condition.

They also had on display a full range of Minsal specialised supplements for cattle, sheep, horses, poultry and pigs, all of which contain a full quota of the essential trace elements.

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Newton Victor, Ltd., 15, Cavendish Place, London, W.1, exhibited its "K-5" portable X-ray apparatus, described as a "complete X-ray unit in a suitcase"—providing facilities in a most compact and flexible form for the X-ray examination of small-animals and the extremities of large ones. Lightweight (only 56 lb. packed in its carrying-case) and shockproof, the unit can be used in the surgery, patient's home or field—wherever suitable electric current is available—and its simple yet precise controls ensure convenience and flexibility in operation. The "K-5-15" apparatus is a mobile form of the unit, specially developed for surgery use.

Also exhibited was the Newton Victor "Inductotherm" short-wave diathermy apparatus—a compact and portable generator of therapeutic heat for use in both large- and small-animal practice. Applied without noise or fuss, and inducing its heat safely and soothingly deep in the vascular tissues, inductothermy is well tolerated even by the most nervous animals.

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Pharmaceutical Specialities (May & Baker) Limited, Dagenham, Essex, exhibited a selection of their veterinary products, the complete range of which is confined to members of the veterinary profession.

M & B Sulphonamides.—In addition to the well-known and widely used "M & B 693" and "M & B 693" soluble in systemic therapy, emphasis was placed on "Thalazole" and the important place it holds in the treatment of intestinal infections.

"Compron," a compressed product employed in the prevention and treatment of post-partum metritis, was also featured as an advantage over older forms of pessary medication.

"Trinamide," a new triple sulphonamide, was introduced for the systemic treatment of those bacterial infections demanding maximum drug activity on the basis of oral administration once daily. "Trinamide" consists of equal parts of sulphamerazine, sulphadiazine and sulphapyridine, and, in addition to standard presentations, a 5-gramme tablet is provided for the convenience of large-animal practice.

Antihistaminics.—"Anthisan," now well established, and the more recent "Phenergan," were the products recommended in the symptomatic treatment of anaphylactic and allergic reactions.

"*Protegan,*" a recent development in the treatment of penicillin-resistant mastitis, was given prominence. This product in single-dose collapsible tubes is particularly indicated in staphylococcal mastitis.

Penicillin.—A range of preparations was displayed, including penicillin oil-wax suspension in collapsible tubes for intramammary injection. "Distaquaine" suspension (procaine penicillin G), distributed on behalf of the Distillers Company (Biochemicals) Ltd., was also displayed prominently as an effective means of carrying out systemic penicillin therapy based on 24-hourly dosage.

XUM

Reckitt & Colman, Limited (Pharmaceutical Department), Hull, exhibited the following products:—

Dettol antiseptic.—Non-poisonous, non-staining, for treating injuries in animals and for the protection of the veterinary surgeon. Dettol is a highly efficient germicide.

Dettol obstetric cream.—For use in calving, foaling, lambing, etc. Highly germicidal and deodorant.

Dettol teat and udder salve.—Is recommended for routine use on udders to keep them soft and supple, and as an aid in the prevention of mastitis. It is antiseptic and is destructive to *Streptococcus agalactiae*. It is odourless, and will not taint milk.

Dettol veterinary pessaries.—Are constituted so as to produce an antiseptic mixture which will retain germicidal efficiency even in discharge, pus and blood, without fear of causing irritation. They possess excellent deodorant properties.

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Willows Francis Pharmaceutical Products Ltd., Alpha Laboratories, Whitchurch Road, Shrewsbury, Salop.—Willows were pleased to meet the profession at their stand at the N.V.M.A. Congress at Cardiff and in the limited space at their disposal effectively displayed their well-known and widely used specialities. In addition to these, a varied selection of instruments and accessories was shown.

Great interest was aroused in their intravenous apparatus selected to be used for the Anavenol (I.C.I.) and Anavenol K (I.C.I.) demonstrations.

The T.T. calipers fitted with a magnifying glass, to facilitate the reading of the scale in darker places, created discussion and found approval in many cases.

1951 will mark the firm's 200th anniversary of service to the profession.

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Other effective exhibits were those staged by Abbott Laboratories, Ltd., 3, Wadsworth Road, Perivale, Middlesex, Boots Pure Drug Co., Ltd., Nottingham, and Willington Medicals, Ltd., Alpha Laboratories, Whitchurch Road, Shrewsbury, Salop.

NEW VETERINARY RESEARCH STATION FOR EIRE

The Irish Independent reports that Mr. Dillon has purchased, on behalf of the Government, Abbotstown House and lands, Castleknock, Dublin, the residence of Lord Holm-Patrick, where the Minister proposes to establish an up-to-date veterinary research station.

The present small station at Thornhill, Drumcondra, Dublin, which has about 24 acres of land attached, will be sold, as well as Braunsbarn farm of about 300 acres on the Naas road, near Dublin, purchased about five years ago. There are no suitable buildings at the latter, and the erection of those necessary would be very expensive.

Abbotstown House—a large residence, with a farm of 450 acres—is capable of being adapted comparatively cheaply. Mr. Dillon means to establish a thoroughly up-to-date research station there and to use the farm in connection with the station and for any other agricultural purposes which may commend themselves. A considerable staff of professional, skilled and unskilled labour will be required when the scheme gets under way.

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THE SOIL ASSOCIATION

The Soil Association was founded in 1946 primarily to foster the study of soil ecology, believing that this has a great contribution to make to what it regards as the right approach to a better understanding of health—"the positive one of promoting vitality rather than the negative one of preventing disease." An important feature of the organisation is its Scientific Panel which, consisting as it does of a number of medical men, biochemists, soil scientists and farmers, has paid the veterinary profession a pleasing compliment in appointing as its Chairman one of our colleagues, Major R. C. G. Hancock. Major Hancock succeeds Dr. Scott Williamson, who has retired on account of ill-health. The President of the Association is Lord Teviot, and the Organising Secretary Lady Eve Balfour, author of the well-known work "The Living Soil."

THE CLOSING MEETING

(Adjourned Annual General Meeting)

Induction of Mr. S. F. J. Hodgman as President

The Adjourned Annual General Meeting (the closing meeting of Congress) was held in the Technical School, Cardiff, on Friday afternoon, September 8th, 1950, with the retiring President, Mr. J. W. Bruford, in the chair for the first part of the proceedings.

The President: The first item on the agenda is "Matters that have arisen during the Congress," and I will ask the Secretary if there are any matters which may be brought before this meeting.

The General Secretary: Up to the present I have not had any matters to bring before this meeting.

The President: Does anybody wish to raise any matter?

Dr. J. S. A. Spreull: Is it in order to discuss the Animals Anaesthetics Act?

The President: I am afraid it is not.

Dr. Spreull: At this Congress I wanted to express my views on this matter and our attitude. I consider the Act is obsolete and will serve no useful function.

The President: Dr. Spreull, actually this matter has been taken up with the Ministry.

Dr. Spreull: I have already taken it up twice with the Ministry.

The President: At the present moment the position is that it is still under discussion with the Ministry, and is in the hands of the General Purposes and Finance Committee.

Dr. Spreull: Have the views of the members of the Association been asked on this matter?

The President: Not yet, but certain members have already written in.

Dr. Spreull: We have the assurance that something is being done?

The President: Most definitely, yes. I do not recall seeing any observations from you; if you wish to make any, would you write in and then perhaps we can use the weight of any observations or evidence that you have.

The President (continuing): I will ask the Secretary if there are any resolutions to be brought before this meeting.

The General Secretary: I have not been notified of any resolutions passed by any of the meetings held this week which it is desired should be brought before this meeting.

Votes of Thanks

The President: Item No. 8 is Votes of Thanks. The first vote of thanks is in relation to the City Council, and I will call on Mr. Hebeler to make the proposition.

Mr. H. F. Hebeler: It gives me great pleasure to propose this vote of thanks to the Lord Mayor of Cardiff and the City Council for according to the Association the honour of a Civic Welcome, a Civic Reception and in addition providing accommodation in the Technical College for the meetings of the Congress and for the Exhibition. I think everyone will agree we have had a most wonderful Congress in surroundings which by their beauty and dignity have added greatly to our pleasure and comfort. (Applause.) The magnificent surroundings in which the Civic Reception was held and the beautiful singing will remain a very pleasant memory in years to come. This building which we have used for our meetings has been ideally suited to our purpose, and our thanks are especially due to Dr. Harvey for so kindly throwing open such a large number of rooms for the use of the Association. We also wish to thank his staff for their unfailing courtesy and helpfulness.

I should like to offer a special word of thanks to the Lord Mayor for the way he entered into the spirit of one of our

most happy banquets; his response to our doughty Scots champion will remain a very vivid memory. I think the result was a draw, but I hope to hear the result of a return match in the not too distant future. (Laughter.)

In addition our thanks must be accorded to the Medical Superintendent for the facilities provided at the Whitchurch Hospital Farm, and particularly to the Farm Manager who took so much trouble to ensure that the demonstrations were seen by all.

It gives me the very greatest pleasure, Sir, to propose this vote of thanks.

This vote of thanks, and those that followed, were carried with acclamation.

The President: The next vote of thanks is to the Readers of Papers, and I call upon Mr. A. J. Wright to propose this.

Mr. A. J. Wright: It is with the greatest pleasure that I propose this vote of thanks to Readers of Papers, Openers of Discussions, Demonstrators and Chairmen; also to the Recording Secretaries, and The Imperial Chemical Institute Film Library for the loan of their films. I am sure you will all agree with me that without this band of people this Congress would have been in many respects very flat, and we are very grateful to them for the amount of time that these people have taken in preparing their excellent papers and demonstrations which often cause mental stress. Our thanks are due to them all, and I move this vote of thanks with very great pleasure.

The President: The last vote of thanks is to the South Wales Division and its members, and I particularly wish to move this from the chair. This vote of thanks is to the President and members of the South Wales Division for their hospitality at the informal gathering on the eve of the Congress, and for the assistance given by members of the Division in the work of the Provisional Committee, also to the Divisional Committee for organising the Congress, and especially to the Chairman, Mr. R. W. Hall and to the local Hon. Secretary, Mr. J. H. Hughes (Applause), and also to Mr. Hall for making all the arrangements in connection with the pleasure trip to Barry. After setting the ball rolling with an At Home which was a most delightful and happy function, which set such a very high standard, the rest of the week was bound to be a great success and this high standard has in fact continued throughout the whole week. We are very grateful to them and hope they will derive pleasure from the knowledge that they have been the means of the Association having had an extremely happy and profitable Congress. (Applause.)

In this connection I am sure you will like me to express your grateful thanks to the South Wales members of the Ladies' Guild and their President, and also one person in that Guild who worked very quietly in the background but who I can assure you had a tremendous amount to do with the organisation of the parts of the Congress which is the province of the ladies. I am referring to Mrs. W. R. Wooldridge; we owe her a very great debt of gratitude for all the very careful work which she has done. (Applause.)

Presentation to the Hon. Local Secretary

Mr. Hall and the Provisional Committee will agree I am sure (the President continued) that they would not have been able to produce a Congress like this if it had not been for the very great help and advice, the great kindness and tact shown by their Hon. Secretary, Mr. Hughes. (Applause.) I know that the office staff at Headquarters have had the best possible co-operation from him, and Mr. Hughes, the Association deeply appreciates all that you have done, and wish me on their behalf to make this small presentation of a wireless set to you in recognition of the very efficient and kind way in which you have run this Congress. (Applause.)

Mr. J. H. M. Hughes: I have been greatly moved to-day by the kind words spoken by our President for the small efforts I have made in trying to carry out the arrangements made by the Provisional Committee so far as the Congress is concerned. We had a very excellent Provisional Committee and they have worked in the closest co-operation with me all these nine months. Mr. Hall, our Chairman, also co-operated wonderfully well. (Applause.) He has been to my office on many occasions discussing little details which needed consideration to make the events a success. But I feel a little sorry that our Hon. Secretary for the South Wales Division is not standing up here to-day and myself sitting in the body of the hall, because I feel the Hon. Secretary should have this great honour. I have spoken to Mr. Bryson many times on this matter, but he turned it down because he lives a matter of 70 odd miles away from Cardiff and has not the local contacts I have; that is why Mr. Bryson is not in this happy position. At the same time I have had very great help from the office staff; they did an immense amount of work and took a lot of the details off my shoulders. The organisation needs a good deal of work, and the work of the staff left me free to go into the larger matters concerned with the Congress.

The applause from the body of the hall was sufficient recompense to me irrespective of the excellent gift. It is a very appropriate gift because I said only a few weeks ago that, like myself this afternoon, my old set was getting a bit tired. I can assure you my wife and I will look forward to many years of listening from this most acceptable gift, and every time we turn it on we shall recollect this happy Congress.

I have refrained from making any comments on the Congress; little snags have turned up but definitely no major ones. I must apologise for the inefficiency of our epidiascope and the operator at the same time. (Laughter.) We were rather confused in our voltage. As far as the operator was concerned, it was arranged for my assistant to operate, but he had to go to a job at the hospital and did not get back in time, consequently when Dr. Montgomerie and I tried to operate it we ran into trouble.

It was most unfortunate that the weather was not kind to us. I do thank you, Mr. President and ladies and gentlemen, for your very kind gift, and I can assure you if there is anything I can do on behalf of the Association I shall be delighted to do it. (Applause.)

Mr. R. W. Hall: I feel just a little overcome by all the kind things which have been said, but I wish to thank you very much for all you have said; any little thing that I have done has been done with a good heart and with only one object, that is the success of the Congress. (Applause.)

Tributes from Overseas Delegates

The President: I know there are certain of our visitors who wish to address the meeting, but first I will ask Mr. Knight to read a letter from Professor Bouckaert.

The Secretary read the following letter from Professor J. H Bouckaert, representative at Congress of the Union Vétérinaire, Belge:—

Dear Mr. President,

I deeply regret that I cannot stay until the end of the Congress. I thank you most sincerely for the kind invitation you extended to the "Union Vétérinaire, Belge." It was a great honour for me to be appointed to represent my Association at Cardiff this year. It is always with great pleasure and deep interest that I assist at your annual meeting: every year there is much to learn not only on the scientific side but also in the professional part. The

papers presented and the discussions were again of a very high scientific standard, while your professional organisation is wonderful and may well be an example to all veterinary associations.

I present to you and to the N.V.M.A. the greetings of the Belgian Veterinary Association and its wishes for the further development and prosperity of the Association.

All my thanks for the very good reception at your Cardiff Congress.

Yours very sincerely,
J. H. Bouckaert.

Professor Birger Carlström (representing the Swedish Veterinary Association): I want first of all to thank you and my veterinary colleagues here for the pleasure of being with you during your Congress Week. I have enjoyed it all very much and was happy to have been invited to present a paper to you. Now I am also very glad to have this opportunity to say some words of thanks to the Executive of the Association and to all you British veterinarians. My wife and I have had a marvellous journey in your country; we have been round England, Scotland and Wales filling a programme arranged by the National Veterinary Association, and I know that Mr. Knight especially must have had tremendous work to arrange this. Therefore, I would offer my first thanks to those who organised my tour, and next to all those who looked after us on our way. I regret not being able to express all that is in my heart. During this year I have had an opportunity of visiting most of the veterinary schools and research stations in Great Britain, and following several practitioners in their daily work. I have been received in a way that I did not think was possible. I know myself what it means to have visitors when there is much to do and you are short of time, yet I have always been received with great friendliness, sometimes for many days on end, and you have offered your valuable time to expound and tell me everything of interest in connection with your activities. The result is that I feel I have made good friends in this country (Applause) and have learned a great deal about British veterinary activities. I can go home and tell my colleagues in Sweden that they have much to learn from this country, and that there will still be more to learn in the future. I do hope that the contacts made between the veterinarians of Great Britain and Sweden will continue and be enlarged. This will be of great importance, for Swedish veterinarians can possibly be of some value to you; I know that my colleagues in the veterinary school in Stockholm and their Veterinary Association fully agree with me in this. Mr. President, ladies and gentlemen, I thank you very much indeed. (Applause.)

Mr. F. Gjesdal (representing the Norwegian Veterinary Association): It is a great honour for my Association and an especial privilege for my wife and myself to be allowed to take part in this National Veterinary Medical Association Congress in Cardiff. I wish, as Secretary General of the Norwegian Veterinary Medical Association, to express my deep appreciation of your kind invitation. It was my fervent hope that during this visit I should have an opportunity to get acquainted with your British Association and meet as many as possible of my British colleagues, and I am glad I have succeeded in that. I confess that this is my first visit to your great country, and I must also confess that I am already feeling very much at home here. (Applause.) I think that what we have been through together and what we are going through to-day has served to strengthen our mutual ties to an unusual degree. In this connection I am also thinking of those professional interests which all veterinarians share, and of the common use of scientific experience and progress, particularly between countries and nations which are so closely related.

Many Norwegian colleagues already have come to Great Britain and studied and learned from you, and drawing from your rich experience have brought back an increased knowledge in the field of veterinary science. Our country is small, but you who have devoted so many efforts to scientific research and experiment are larger and have very much to give us. I wish to take this opportunity to express our profound gratitude for everything you have done for the Norwegian veterinarians in this respect, and also for the kindness and hospitality always shown to them. We like to come here despite the fact that what we can give in return is not more than just our thanks; but may I also be allowed to say, Mr. President, that we shall be extremely happy to see an increasing number of British veterinarians in Norway. I assure you you will be most welcome, and your Norwegian colleagues would be slightly sore, in fact, should you by-pass our country when you make your plans.

It is my privilege and pleasure to convey to your Association at this Congress the most sincere fraternal greetings from the Norwegian Medical Veterinary Association, wishing your Association and every one of its members all possible success in the work for health and veterinary science. (Applause.)

The President: Before I ask for any other tributes, I would on behalf of Dr. Crawford, of U.S.A., just express his sorrow at not being able to attend this meeting. He did in fact address the meeting this morning, at about a quarter to one, in the most appreciative terms, and it was not until after that meeting that he realised that he should have addressed this meeting. A portion of his address was so separated from the subject under discussion at that moment that it will be possible to lift the words which he used there from that part of the proceedings into this and it will be published in *The Veterinary Record*. I am not going to repeat the very nice expressions that he used, but he did wish me to convey to you his very deep appreciation of the happy week he has had here. (Applause.)

Dr. A. B. Crawford, who represented the American Veterinary Medical Association, in that section of his contribution to the discussion of Mr. Lawson's paper to which the President made reference, said: I have been associated with this problem (of Brucellosis) for so many years that I seem to be one of you all. I was very fortunate in being asked as a delegate to your Convention from our American Veterinary Association. I have not had a chance so far to make reference to that in public, but I would like to give you the best wishes of our American Veterinary Association, with the hope that our respective Associations may continue to function in the same co-operative manner as they have in years gone by, and that our good relations will continue "world without end." (Applause.)

I wish I had more time to tell you my impressions. I have been more than happy to be here. I like your method of holding meetings, having one or two papers a day, and then giving an opportunity for any person who agrees or disagrees to come up and make remarks. In our country we have meetings going simultaneously, one paper following another during two or three days, and we have something in the neighbourhood of 150 to 200 papers. With this method of incorporating the social life with your meetings I am very much in accord. I wish I could bring our whole veterinary profession over here and let them listen to you people talking. I have never heard better papers and discussions in any meetings I have ever attended. It has thrilled me to listen to you all.

Please allow me to express my appreciation of the many courtesies which you have extended to myself and Mrs. Crawford. This is our first visit to Europe, we have travelled a good deal, and it has been wonderful to take part in a

group where we can understand the language. Thank you very much indeed. (Applause.)

Mr. J. W. Heney (Dublin): In the apparent absence of my senior colleagues from Eire, I would like to have the honour of conveying sincere greetings from the Veterinary Medical Association of Ireland, and combined with these wishes to pay tribute to you, Mr. President. We trust that your Association will be rewarded with a continuance of the success and prosperity which it so richly deserves. I take this opportunity of stating that I feel highly honoured to have taken part in this memorable Congress in this lovely city. (Applause.)

Dr. C. S. M. Hopkirk (representing the High Commissioner of New Zealand): As the official representative of His Excellency the High Commissioner for New Zealand, I should like to express to you the appreciation of the High Commissioner that a representative should have been asked to this Annual Congress of the N.V.M.A., and to convey to you the well wishes of the New Zealand Government for the continued and increasing success of the veterinary profession in the United Kingdom, and of the English veterinary tradition.

I also represent the New Zealand Veterinary Association, your affiliated and junior body, which is following closely in your footsteps, so that it is with much pleasure that I have the honour to convey the greetings of your New Zealand colleagues. In this connection I should like to take this opportunity of thanking the profession generally for the way in which they have received Mr. Purdie. He is the first of a series of young veterinarians who will be sent on Scholarship to this country to improve their knowledge of veterinary science and make solid British contacts.

On a more personal note, as a guest, I should like to say this Congress has been extraordinarily successful and enjoyable, due in large measure to the personality of the President and his wife (Applause) who have risen so well to the many occasions demanded—to you, Sir, for the dignity which has characterised all your appearances, and to your wife for the unalloyed and infectious display of enjoyment on the social side. We also appreciate the clarity of thought in the administration which has distinguished this Congress due to very much backroom work. I shall take back to my New Zealand colleagues an account of very well run meetings, and I hope to incorporate in our meetings some of the refinements I have seen here. (Applause.)

The President: Does anybody else wish to address the meeting?

Mr. D. R. Allen: As one of the members of the Provisional Committee I should just like to add a word of thanks to the President, Mr. Hall, Mr. Hughes and Mr. Knight, for their outstanding work on the Provisional Committee. Mr. Hughes modestly talked about his own small efforts, but they were not small efforts, and he has carried out a tremendous amount of work most efficiently. I should like sincerely to thank those four gentlemen for the way they have undertaken this work of organisation.

The President: Are there any other Overseas delegates?

Dr. Rohas Maldonado (Dean of the Veterinary School of Colombia, South America): It was for me a very big honour to attend this Congress and listen to the papers. In Colombia we are a new profession and we have much to do and I thought I could learn many things in England. Now I am sure there are a great many things I can learn; to-day in South America we appreciate very much any information we can gain from our English colleagues. Thank you very much for the honour you have conferred upon me by your invitation to come here and hear all these papers. (Applause.)

Induction of New President

The Retiring President: The next item is "Induction of New President." Before inducting the new President I would just like to say a few words. Coming as I am to the end of my year of office, I cannot say it has been a year in which all our efforts have been entirely successful. I believe, nevertheless, that much good work has been done, and it is possible that the fruits of our efforts have yet to ripen. I am deeply grateful to all those members of the Association who have worked so hard in the preparation of memoranda in supplying and preparing material for *The Veterinary Record*, and producing handbooks and articles for publication. I think it is perhaps not quite realised by the Association as a whole what a tremendous amount of work is put in by those Chairmen of Sub-committees and the small groups who prepare these articles and publications. More often than not members of the Association are totally unaware of the people who really do the work. I thank here on your behalf all those people who do so much in such a quiet way for us. My grateful thanks are also due to the Chairmen of Committees who have helped so much in long protracted negotiations, who have often poured oil upon troubled waters and who give so completely of their time in the interests of all. (Applause.)

To be President of this Association is not only a great honour, but also a most memorable experience, and I shall never fail to marvel at the help, guidance and friendship which I have had from so many members, and the reward has come in the great success of this Congress. (Applause.) I do not regard this help and friendship as anything personal, but as an intrinsic part of the democratic make-up of our Council and Committees. And to you, John Hodgman, coming to take my place, I can only say that I think you need never fear for one moment that should anything difficult come before you, you will fail to find many people ready to assist you.

Therefore, in putting this gown and chain upon your shoulders, I do so in the knowledge that you will bring great honour to this Association, and I hope and pray that you will have a very happy time during your term of office. (Loud and sustained Applause.)

The President (Mr. John Hodgman): Mr. Senior Vice-President, ladies and gentlemen, thank you very much indeed for the way in which you have received this short ceremony. I thank you, Sir, for all the kind and rather flattering things you have said about me during this Congress. The great responsibility which I have now taken over would I am afraid shake me were it not for the assurance you gave me just now. I know, Sir, that I shall have you at my side.

It is now, Sir, my very great privilege to convey to you the deep gratitude and appreciation of us all (Applause) for the way in which you have conducted the affairs of this Association during your year of Presidency. I thought I had some idea of the amount of work the President had to do, but quite frankly I was very wide of the mark, and I must congratulate you, Sir, on the tremendous amount of time and care you have spent on the many problems with which this Association has had to deal; especially have I admired your tenacity in putting the principles of the veterinary profession before all else. From our conversations I know that you feel there are many things you have left undone or not completed, but I am sure that when you have time to sit back and think about this year of office you will have no cause to be dissatisfied with yourself. (Hear, hear and Applause.) In offering you our most sincere thanks for the tact and efficiency with which you have managed the Association's affairs, I would, if I may, like to couple with it the name of your wife (Applause)

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whom I know has been a great source of encouragement and support to you. If my verbal thanks have not been very eloquently expressed, they are at least deeply sincere.

Ladies and gentlemen, I am sure you will all join me in acknowledging the debt we owe to our retiring President. (Continued Applause.)

Mr. Bruford: Mr. President, ladies and gentlemen, I just cannot thank you enough for the very kind way in which you have received the words of our President. To save any possible chance of my wife being asked to say anything at all, I will just say for her, thank you very much indeed, and I would just like to thank her too for the very great support she has given me during the whole of this year. (Applause.)

Declaration of the Close of Congress

The President: I am afraid my first duty as President is rather a sad one in that I have to declare this, the 68th Congress closed. But I would like to remind you that the next Congress will be held at Eastbourne in September next, and I sincerely hope you will all do your best to attend. (Applause.)

The proceedings then terminated.

VICTORIA VETERINARY BENEVOLENT FUND LADIES' GUILD

ANNUAL GENERAL MEETING

The nineteenth Annual General Meeting of the Ladies' Guild was held in the City Hall, Cardiff, on September 7th, 1950.

The President, Mrs. Hill-Owens, welcomed the following ladies: Mesdames Allcock, Bryson, Brennan, Blakemore, Bruford, Bowen, Corrigall, Hall, Hughes (Cardiff), E. Jones, Jennings, John, Kelly, Locke, Mitchell, Montgomerie, Morgan, Ottaway, Parsonage, D. Pugh, E. Pugh, Ritchie, South, Stewart, Stamp, Simpson, Thomas, Wynne, M. E. Wright, Wilson and G. H. Wooldridge.

Hon. Secretary's Report

The Hon. Secretary announced that the past year had been the most successful in the Guild's history and drew special attention to the work done in Wales—where, although the Guild was almost unknown a short time ago, there were now two flourishing divisions—and also to the achievement of the Scottish divisions in raising more money this year than the whole Guild had done ten years ago. Reference was also made to the number of valuable individual efforts, arranging whist drives, raffles, etc., and collecting subscriptions. Finally, members were reminded that the President each year, Mrs. Glover and herself were members of the V.V.B.F. Council, and had been elected to show how greatly the Guild's contribution to the Fund was appreciated.

Financial Report

The Hon. Treasurer announced that with the balance from last year, there was the record sum of £888 to be distributed. After some discussion £880 was allocated as follows:—

(1) To the V.V.B.F. £800, to be divided between the Christmas Appeal (£500) and current relief (£300).

(2) To the National Veterinary Benevolent and Mutual Defence Fund £80.

Election of Officers for 1950–51

President.—Mrs. A. Thomson, 444, Shields Road, Glasgow S.1.

Hon. Secretary.—Mrs. E. B. Wooldridge.

Hon. Treasurer.—Mrs. R. E. Glover.

Hon. Auditor.—Professor J. G. Wright.

Committee.—Mesdames Bruford, Hancock and Hodgman, with Mesdames Matthews and Montgomerie (re-elected) and M. E. Wright.

The meeting closed with a vote of thanks to Mrs. Hill-Owens, warmly expressed by Mrs. Mitchell, for her hard work and enthusiasm as President during the past year.

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Some of the monies raised during the year are given below:—

	£	s.	d.
Dance at Ayr (Mrs. Stewart)	115	7	0
„ Dumfries (Mrs. Sangster)	70	0	0
„ Penrith (Mrs. Reid)	63	0	0
Students' Council, Royal Dick College ...	31	0	0
Whist Drive, North Wales Division	35	0	0
Bridge Drive, Lancs and Cheshire Division ...	13	0	0
„ Eire Division	47	13	2
Dance and Raffle, Students' Union (Dublin)...	19	0	0
S. Wales Division	125	0	0
Mrs. Mitchell (Edinburgh)	31	4	6
Mrs. Simpson	11	19	0
Mrs. G. H. Wooldridge	8	6	0
Mrs. McClean (N. Ireland)	8	5	0

VETERINARY SURGEONS ACT, 1948

Supplementary Veterinary Register

The Council of the Royal College of Veterinary Surgeons has directed the Registrar under the above Act to register in the Supplementary Veterinary Register the names of the persons set out below.

This is the eighth list of registrations and the absence of the name of any person who has made application in prescribed form before the prescribed date does not imply that such applicant has been refused registration.

The eighth list consists of further persons in whose cases the Council are satisfied that the requirements of the Act have been met.

The date of registration is Monday, November 6th, 1950.

Further lists of registrations in the Supplementary Veterinary Register will be published.

Eighth List of Registrations

Names and Places of Practice

Angel, William, 11, Silvermere Road, Catford, London, S.E.6.

Browne-Cole, William, 127, Cheltenham Road, Stokes Croft, Bristol, 6.

Carey, Ernest George, 1, Elm Grove, Gloucester Road, Bath, Somerset.

Fletcher, Henry John, 354, West Barnes Lane, New Malden, Surrey.

Harmer, Leslie, 264, Sutton Road, Southend.

Kirsch (Mrs.), Margurida Vera, Southdown Bungalow, Westfield Avenue, Saltdean Mount, Sussex.

Lee, George, 736, Barking Road, Plaistow, E.13.

Luxmoore, Robert Charles, 7a, Royal Parade, Kew Gardens, Richmond, Surrey.

Simpson, Pauline Joyce (Mrs. Quick), 21, Ridgeside Avenue, Withdean, Brighton, Sussex.
Richardson, Harry Robinson, Market Hill, Hedon, near Hull, Yorkshire.
Robins, Matthew William, Hassocks Orchards, Hassocks, Sussex.
Squires, Joseph Hudson, 37, Broomfield Road, Ealing, W.13.
Summers, John Clarke, Milescott, Allendale, Northumberland.
Thomas, Charles James Armstrong, 29, Queens Court, Kenton Lane, Kenton, Harrow.
Vause (Mrs.), Vera Maude, Southdown Bungalow, Westfield Avenue, Saltdean Mount, Sussex.
Wagner, Harold, Liberty Hall, Brookshill, Harrow Weald, Middlesex.
Wagner (Mrs.), Vida Matilda, Liberty Hall, Brookshill, Harrow Weald, Middlesex.
Watkins (Mrs.), Florence May, 36, Dalston Lane, Hackney, E.8.
Watkins, Thomas, 36, Dalston Lane, Hackney, E.8.
Wilson (Mrs.), Betty Elizabeth, Greenheyes, Woodford Road, E.18.
Whenmouth, Reginald George, 5, Rose Hill Villas, Stoke, Devonport, Plymouth.
Welch, Percival Clifford, The Priory, Saffron Walden, Essex.
Wilkinson, Christopher Samuel, 164, Eccles Old Road, Salford, 6, Lancashire.
Wright, Noah Davy, Rosslyn House, Yoxford, Suffolk.

HOMOEOPATHY IN THE VETERINARY FIELD

On October 7th eleven veterinary surgeons from all parts of Great Britain met in London to discuss with homoeopathic physicians the application of homoeopathic therapy and philosophy in the veterinary world.

The latter were represented by Sir John Weir, Physician to the King, Dr. A. Benjamin, and D. M. Gibson, Esq., M.R.C.S., L.R.C.P. The British Homoeopathic Association was represented by its Vice-Chairman, Mr. A. L. Wagland. Apologies for absence were received from the Chairman, Major G. Dennison and Sir Adrian Boult, a member of the B.H.A Council.

After an exploratory discussion, it was agreed that homoeopathy had a part to play in the service that the veterinary profession renders to mankind in general and this country in particular.

It was stated that there was a need to extend knowledge of the principles and practice of homoeopathy, and that the few veterinary surgeons practising homoeopathy should bring to the notice of the profession generally the results of their work in an acceptable and understandable way.

It was therefore agreed that veterinary surgeons interested in homoeopathy should create an organisation to this end. Major Hancock and Mr. J. H. M. Cole-Powney were elected Chairman and Secretary respectively. With an executive committee and also with the support of the British Homoeopathic Association, it is hoped that in the near future, both short- and long-term policies will be put into operation.

Any member of the veterinary profession desiring any information on this subject should communicate with the Chairman or Secretary.

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SLAUGHTER POOLS

Owing to heavy supplies of cattle now reaching grading centres the Ministry of Food has arranged for "pools" in which animals may be held until slaughterhouses can deal with them. These pools have been set up to facilitate the even flow of cattle to slaughterhouses. When supplies are very heavy surplus cattle can be turned into accommodation grazing and sent later to convenient abattoirs when killing facilities are available—especially on Mondays, before supplies for that week begin to arrive. It is emphasised that these arrangements will not restrict marketings by producers, as the cattle are graded before being put on grazing. Animals are unlikely to be held in pools for more than a few days.

QUARTERLY MEETING OF COUNCIL, N.V.M.A.

Summary of Proceedings

At the meeting of Council held at the Connaught Rooms, London, on Wednesday, November 1st, 1950, under the chairmanship of the President, Mr. S. F. J. Hodgman, business additional to the discussion of voluminous reports of committees was of small proportions but of live interest. Welcoming letters were forthcoming from Eastbourne and the Yorkshire Division in connection with the decisions to hold next year's Congress at the Sussex resort and that of 1952 in Harrogate, respectively, while an appreciative letter in acknowledgment of the honorary life membership conferred upon him at Cardiff was read from Mr. Richard Hughes, of Oswestry. Members were concerned to learn, however, that the initiatory member of the new list was unable, through illness, to pen his letter in person; also that our genial host at the South Wales capital, Alderman George Williams, the Lord Mayor, is in hospital. Both have been sent messages of sympathy, expressive also of the Association's earnest wishes for their speedy restoration to health. A vivid and appreciative account was given by the President of his recent visit to the Danish Veterinary Association's Annual Congress at Aarhus.

Council accepted the view of the Organising Committee that the proceedings at meetings between representatives of the Divisions of the Association and local branches of the R.S.P.C.A., held to discuss proposed new clinics, should be the subject of an agreed minute to be sent to the N.V.M.A. and R.S.P.C.A. headquarters. The Committee has learned from the Home Office, Civil Defence Department, that the scope of veterinary duties to be carried out by the Welfare Section of the Civil Defence Corps has not yet been considered in detail, but that the Association will be consulted when detailed planning on the subject is undertaken. The Department is to be advised of the Association's desire that the Animal Health Division and representative bodies of the profession be brought into the discussion.

The Home Appointments Committee reported that the salaries of senior members of the staff of the Animal Health Division of the Ministry of Agriculture had been improved as from October 1st, as the result of the Government's decision to implement the recommendations of the Chorley Committee on the remuneration of Higher Civil Servants, but the Committee regarded the situation with reference to lower grade salaries as deplorable, and in this respect the closest consultation between the Association and the Association of State Veterinary Officers will be maintained. Following discussion, during which it was evident that Council were far from satisfied with the increased remuneration of the senior officers of the Division, the President indicated that the Officers of the Association also have the interests of the junior members of the veterinary staff very much at heart.

The subject of the employment of veterinary students has been under informal discussion with the Royal College. Certain suggestions put forward by the Association's representatives have not been accepted prior to the issue of a letter to be sent by the President of the Royal College to every member of the profession explaining exactly what the position must be regarding the employment of veterinary students and unqualified persons. This matter is to be reconsidered after issue of the letter by the Royal College. A sub-committee has under consideration the formation of a service by the Association to provide assistants for single-handed veterinary surgeons in emergencies which may arise from time to time; its final report will be referred to Divisions.

The report of the Parliamentary and Public Relations Committee recorded the receipt of a welcome intimation that the Ministry of Agriculture is drafting an Order to require the Railway Executive and other carriers of horses and other livestock to feed and water them wherever they may be at the time, at not less than stated intervals during the journey, *i.e.*, the onus of feeding and watering will rest on the carriers.

Two matters mooted at the Cardiff Congress have engaged the attention of this Committee. As then arranged, Dr. Spreull has put in writing the views he expressed and the suggestions he made with regard to the Animals (Anaesthetics) Act, 1919—which in his opinion now serves no useful purpose—and a sub-committee has been appointed to consider the question. Apropos the references

to the necessity for the provision of cleaner food made by Mr. Brumord in his presidential address, the Parliamentary Secretary of the Ministry of Food—who is understood to be taking a keen personal interest in this subject—is to receive copies of appropriate reports prepared by the Association and be informed of the willingness of the Association to send a delegation.

Amongst the many matters occupying the attention of the Veterinary State Medicine Committee was the Revised Tuberculosis (Attested Herd) Scheme: Plans for the Eradication of Tuberculosis on an Area Basis, with special reference to the provision in the scheme of circumstances which will assist individual herd owners towards becoming attested. In the event of the new bonus failing to provide a sufficient incentive, and a check thus being given to the development of the area plan, it is the hope of the N.V.M.A. representatives discussing this matter with the Ministry that further consideration will be given to the Association's proposal that any owner of a herd who can show, by veterinary certificate, that his herd has been tested on one or more occasions, and that the number of reactors at the last test was not greater than, say, 10 per cent., should have the opportunity of receiving not more than four tests, paid for by the Ministry, provided that he agrees to conform to the rules applicable to a supervised herd.

A suggested method upon which it was proposed to implement Council's decision that each member of the Association should have his representation on Council through one Division only, was specified in the report of the General Purposes and Finance Committee. After discussion, this section of their report was referred back to the Committee for further consideration.

The annual general meeting having approved an addition to the Association's Articles of Association providing that persons whose names are on the Supplementary Veterinary Register may be eligible for membership of the Association, it was agreed that those veterinary practitioners who have already written in on the matter be informed that they can now apply for membership on being proposed and seconded.

Arising from the receipt of a request that the Association counteract official statements that a general shortage of veterinary surgeons exists throughout the country, a special Committee has been appointed to examine the question of the number of veterinary surgeons in the profession in the light of present-day circumstances and possible future developments.

The report of the Editorial Committee was supplemented by a statement from the Editor on the recent dispute in the printing trade in relation to its effect on the production of the journal of the Association. The effect had been to dislocate the publication of *The Veterinary Record* to a far greater extent than at any other time in its long history. The measures taken in the office to meet the situation were specified; by these means essential information of an urgent character had been made available and the advertisement revenue maintained intact throughout the period of one month before normal publication could be resumed. The statement was approved and all those concerned were thanked for their handling of the situation. (The substance of the statement was reproduced in our issue of November 11th, which marked the resumption of the issue of normal numbers.)

The last item of Committee business was consideration of the report of the Overseas Committee.

Having received from the Colonial Office an explanation—based on alleged inability to meet Colonial Veterinary Service requirements in the British Isles—of the offer of short contract appointments to a small number of Danish veterinarians, the Committee decided to seek an assurance from the Colonial Office that foreign graduates would not be appointed in future without previous consultation with the N.V.M.A. and the appropriate overseas Divisions of the Association. Proposals for improving the recruitment of holders of the Diploma of Membership of the R.C.V.S. have been made to the Colonial Office.

The Council of the Yorkshire Agricultural Society have decided to limit entries of all breeds of cattle at the Yorkshire Show to those from attested herds only. In previous years, only the dairy breeds were so restricted.

QUESTIONS IN PARLIAMENT

Slaughterhouses (Policy)

Mr. D. Marshall (Nov. 6th) asked the Minister of Food to state his policy with regard to slaugnternouses.

Mr. Webb: I cannot make any general statement of policy at present, since this question is necessarily bound up with that of future arrangements for livestock marketing and wholesale meat distribution, which are now under examination. In the meantime, however, as I have already said, we are encouraging local authorities to build slaughterhouses where existing facilities are seriously inadequate and where there seems to be a permanent need for additional ones.

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Cattle Slaughter

Mr. Scott (Nov. 6th) asked the Minister of Food what precautions were taken to avoid unnecessary suffering to fat cattle waiting for slaughter at abattoirs during the recent period of heavy deliveries.

Mr. Webb: Every precaution is taken to see that animals are fed and watered and that they are properly looked after. The arrangements are supervised by the slaughterhouse managers and my area officers make frequent visits of inspection to see that cattle are treated humanely. If the hon. Member will let me have details of any specific case of ill treatment, I will have enquiries made. I have not, myself, received any complaint of unnecessary suffering.

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Motor-cars (Home Market)

Mr. Basil Nield (Nov. 6th) asked the Minister of Supply if he will make a statement as to the arrangements for the supply of motor-cars to the home market for 1951, and as to the factors which will determine priorities among those who wish to have new cars.

Mr. Douglas Houghton asked the Minister of Supply what arrangements are being made to ensure fair distribution of new cars during the period of reduced supplies for the home market.

Mr. G. R. Strauss: The number of cars to be supplied to the home market in 1951 is at present under consideration. In distributing cars in the home market the industry has been asked to give priority to the urgent requirements of doctors and midwives and there is no intention to add to these priority classes. I have, however, asked the industry to consider measures to improve distribution and I await their proposals.

Mr. Nield: Has the right hon. Gentleman considered the special position of commercial travellers and other business people who may very urgently need a car and have a very old one?

Mr. Strauss: There are so many people to whom one can say that special conditions attach that if we extend this list it would become so wide as to be quite meaningless.

Mr. Houghton: Can my right hon. Friend do anything to stop the practice of some distributors of offering a new car, plus a cash premium, in return for a used car just out of covenant?

Mr. Strauss: I think that is a matter for the motor-car industry, which is very active in trying to stop abuses.

Mr. Watkinson: Is the Minister considering with the industry the question of a possible three-year contract?

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Fowl Pest Outbreaks

Mr. Dye (November 9th) asked the Minister of Agriculture how many cases of fowl pest have occurred in England and Wales during this year up to November 4th; to what extent the source of these outbreaks is imported live or dead poultry; and to what extent the disease is spread by unsatisfactory marketing arrangements.

Mr. G. Brown: There have been 86 such outbreaks. Thirty-seven of these are definitely attributable, directly or indirectly, to infection brought to this country by imported poultry carcases. In many other cases it was not possible to trace the origin definitely. Special arrangements for marketing have been imposed in certain areas to assist in the control of the disease, which does not appear to have been spread through markets recently.

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Food Supplies (Meat Grading)

Mr. Bossom (November 10th) asked the Minister of Food to what extent retail butchers are consulted in the grading of meat; and on how many occasions in the past year has his Department overruled the retailers' advice that the meat should be down-graded.

Mr. Webb: Retail butchers do not take part in the grading of meat, but district meat agents, who are always practical butchers,

have the right to take part with the slaughterhouse manager in the grading of home-killed meat. All these people are, of course, quite impartial and have no financial interest in the result of the grading. In the event of a difference of opinion the majority view prevails.

NOTES AND NEWS

Diary of Events

Nov. 22nd.—Meeting of the West of Scotland Division, N.V.M.A., in the Glasgow Veterinary School, 2.30 p.m.

Nov. 22nd.—Special Meeting of the South-Eastern Division, N.V.M.A., at Frant (Wellcome Veterinary Research Station), 6 p.m.

Nov. 22nd.—Research Defence Society, Stephen Paget Memorial Lecture, in the Physiology Lecture Theatre, University College, Gower Street, W.C.1, 5.30 p.m. (Professor E. D. Adrian, O.M., F.R.S.: "Experiments on the Nervous System.")

Nov. 24th.—Meeting of the Royal Counties Division, N.V.M.A., at Oxford (Forum Restaurant, Masonic Buildings, High Street), 2.30 p.m.

Nov. 28th.—Meeting of the East Midlands Division, N.V.M.A., at Sutton Bonington, 2.15 p.m.

Nov. 29th.—Annual General Meeting of the Scottish Branch, N.V.M.A., in the Royal (Dick) Veterinary College, Edinburgh, 2.15 p.m.

Nov. 30th.—Joint Meeting of the Sussex Division, N.V.M.A., with the Brighton Division of the British Medical Association, at Hove (Dudley Hotel, Lansdown Road), 8 p.m.

Nov. 30th—Dec. 1st.—R.C.V.S. Membership Written Examinations.

Dec. 3rd.—Meeting of the South-Eastern Division, N.V.M.A., at Maidstone (Royal Star Hotel), 2.30 p.m.

Dec. 4th.—R.C.V.S. Membership Examinations: Orals and Practicals commence.

Jan. 10th, 11th, 12th, 1951.—Meetings of Committees and Council, R.C.V.S.

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N.V.M.A. Handbook on the Handling of Animals and First Aid

The Association has now printed, as its publication No. 20, a Handbook on the Handling of Animals and First Aid. One copy will be available to each member of the Association, free of charge, on application to the General Secretary. Copies also will be available for general purchase, at the price of 5s. per copy, on application to 36, Gordon Square, London, W.C.1.

The Handbook has been prepared by the N.V.M.A. in response to requests from various organisations seeking guidance from the veterinary profession in arranging short courses of training for young people in the application of first aid to animals which have been injured or taken ill suddenly.

It is a publication of 172 pages, with 31 figures and three plates, and the subjects dealt with in the two parts are as follows:—

Part I: Outline of first aid; approach, handling and control.

Part II: General principles of first aid; structure and functions of the body; the skeleton; fractures; the joints; the tissues; dressings and bandages; blood and circulation; haemorrhage; wounds; burns and scalds; the nervous system; loss of consciousness; the trunk and its contents; the lymphatic system; the uro-genital system; the respiratory system; the eye and ear; poisoning; transport of injured animals.

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PERSONAL

Our many readers who are acquainted with Professor F. H. Manley, now of the Department of Bacteriology, School of Veterinary Medicine, Auburn, Alabama, will be interested to learn that his son, who, it will be recalled, held a Densham Scholarship at Epsom College, at present holds a Fellowship in the Physics Department of the Alabama Polytechnic Institute; also that his daughter Joan recently married Lt. Gordon Howell, of the American Air Corps, stationed at Randolph Field, Texas.

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Birth.—Arthur.—On November 12th, 1950, at the Radcliffe Infirmary, to Lorna, wife of G. H. Arthur, a son.

McGhee.—On September 11th, 1950, at Engadine, Kineton, to Jane (*née* Palmer), wife of J. H. McGhee, T.D., M.R.C.V.S., a daughter, Joanna Jane.

Pinsent.—On October 12th, 1950, at Heathfield, Bromborough, to Constance, wife of James Pinsent, M.R.C.V.S., a daughter.

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R.C.V.S. OBITUARY

Ashby, Robert Tebbitt, Burcott Lodge, Aylesbury, Bucks. Graduated Edinburgh, May 21st, 1894. Died November 9th, 1950.

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Erratum.—We regret that, through a printer's error, in the tribute paid by Dr. J. S. A. Spreull to the late Mr. John A. A. Naismith, M.R.C.V.S., published on page 630 of our last issue, the date of Mr. Naismith's qualification was erroneously given as July, 1950. The late Mr. Naismith qualified at Glasgow on July 16th, 1945, as indimated in our issue of October 7th.

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ROYAL COLLEGE OF VETERINARY SURGEONS

Animal Management Examination, November, 1950

List of Successful Candidates

London:

Baldwin, I. J. (Credit)
Bloomberg, J. H.
Box, P. G. (Credit)
Dommett, D. J.
Douch, J. A.
Downes, J. E.
Eden, R. M. G.
Evans, J. M.
Hambrook, C. L. E.
Hullis, Roy
Keep, M. E. (Credit)
Keywood, E. K. (Credit)
Lane, D. R.
Mackay, B. H. P.
Martin, H. T. W.
Millar, R. O.
Morgan, D. B. (Credit)
Nelson, D. G.
Pepper, R. T. (Credit)
Simons, M. A. P. (Credit)
Skipsey, Roger
Smith, G. R. (Credit)
Smith, P. L. F.
Taffs, L. F.
Vickers, G. E.
Wilkins, G. T. (Credit)
Williams, J. R. L.

Edinburgh:

Barnes, Joseph
Browne, V. A. D.
Inness, J. F
Jacob, M. B.
Kermack, N. R.
O'Reilly, K. J.
Ross, I. I.
Sellers, R. F.
Smith, V. W.
Spencer, G. A. (Credit)
Thomson, K. S.
Veale, J. C.
Watson, H. B.
Wilson, H. R.

Glasgow:

Craig, James
Jawara, S. A.
McNair, R. C.
Prydie, John

Dublin:

Cullen, R. G.
Dunne, L. G.
Houlihan, T. V.
Liffey, P. K.
Murphy, O. J. N.
O'Hara, D. P.
O'Rourke, Daniel
White, J. J.
Wright, M. L.

Pharmacology, Etc., Examination, November, 1950

London:

Barley, A. P.
Barnsley, D. G. C.
Brunsdon, J. R.
Carnaghan, R. B. A.
Chandler, H. M.
Clarke-Williams, P. R.
Dickens, P. S. E. M.
Ford, G. K.
Herbert, W. J.
Keymer, I. F.
Langford, S. H.
Larkin, P. J.
Manton, V. J. A.
Redmond, M. R.
Simpson-White, P. H.
Thuraisingham, S.
Wheeler, J. M.
Wilkinson, J. S.

Liverpool:

Davies, J. E.
Grainger, K. J.
Hedger, R. S.
Jones, R. A.
Lewis, E. O.
Wright, G. W.

Dublin:

Coghlan, D. P.
Harte, J. R.
Hurley, M. C.
Lee, D.
Lucey, D.
McDermott, P.
McGinley, M. D.
McGirr, P. J.
O'Connor, C.
O'Donnell, O.
Scott, W. A.
Smyth, P. W. W.
Wright, M. L.

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ADDRESSES OF DISEASE-INFECTED PREMISES

The list given below indicates, first, the county in which are situated the premises on which disease has been confirmed, followed by the postal address and date of outbreak.

Swine Fever:

Derbyshire.—West Street, Swadlincote, Derby (I.P., Darklands Road, Swadlincote) (Nov. 9th).

Fife.—16 Holdings, Troustrie, Crail (Nov. 6th); Parkmills Farm, Boarhills, St. Andrews, Fife (Nov. 9th).

Lancs.—174, Yew Tree Road, Fallowfield, Manchester (Nov. 11th).

Lincs (Lindsey).—114, Rowland Road, Scunthorpe (I.P., Glebe Pit Allotments, Scunthorpe) (Nov. 8th).

Northumberland.—3, Round Close, Hexham (I.P., Haugh Lane, Hexham) (Nov. 6th); South Bradford Farm, Belsay, Newcastle-on-Tyne (Nov. 6th); The Chesters, Humshaugh, Hexham (Nov. 9th).

Notts.—Holly Cottage, Scrooby (Nov. 6th); The Bungalow, Clipstone Drive, Forest Town, Mansfield, Notts (Nov. 11th).

Yorks (E.R.).—56, Queensgate, Beverley, Yorks (Nov. 10th).

Yorks (W.R.).—Lower Warmleigh Farm, Roper Lane, Queensbury, Bradford, Yorks; 56, Lansdowne Road, Sheffield (I.P., Back of Ash Farm, Myrtle Road, Sheffield) (Nov. 8th); Green's Farm, Carlton, Goole, Yorks; 32, Beech Street, South Elmsall, Pontefract; Langthwaite Lane Allotments, South Elmsall; 6, Winsbury Road, Sheffield (I.P., Kettlebridge Allotments, Attercliffe) (Nov. 9th); Fairfield House, Kirk Sandall, Doncaster, Yorks (Nov. 10th).

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INCLUSION OF SULPHA DRUGS IN POULTRY FEEDS

Professor F. H. Manley, M.V.SC. (LIV.), M.R.C.V.S., of the Department of Bacteriology, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Alabama, writes:

"I notice that in the *Record* of July 15th, Dr. Blount refers to the inclusion of the sulpha drugs in poultry feeds. This appears to be a universal practice in this country. From the point of view of diagnosis there are obvious disadvantages. The symptoms of disease are often atypical and the causal organism more difficult to isolate when sick birds have been receiving this food. However, losses are apparently reduced."

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£1,000,000 FOR RESEARCH STATION

More than £1,000,000 is to be spent on establishing an Institute of Agricultural Science at Castleknock, Co. Dublin. The European Co-operation Administration has undertaken to defray the capital cost. A veterinary research station is likely to be incorporated, and the new Institute will use every modern method.—*Farmer and Stock-Breeder.*

CORRESPONDENCE

The views expressed in letters addressed to the Editor represent the personal opinions of the writer only and their publication does not imply endorsement by the N.V.M.A.

THE FATE OF HEXACHLORETHANE IN RUMINANTS

Sir,—In order to investigate more fully the pharmacology of hexachlorethane, I have recently consulted most of the American literature and a limited number of publications by other workers which are available to me at the moment. The most striking feature of my search is that very little appears to be known concerning the fate of this drug in the ruminant digestive system or of its subsequent metabolism.

In 1924 Hall[1], recognising hexachlorethane's high chlorine content (one molecule of hexachlorethane contains six chlorine atoms as compared with four in the carbon tetrachloride molecule), investigated its anthelminthic properties against hookworms and other intestinal helminths of the dog. He administered capsules containing coarse crystals of the drug to dogs and found that the faeces next day "contained an abundance of the carbon trichloride crystals, the amount being such as to suggest that the total amount passed was practically identical with the amount administered."

Later, in the same series of experiments, he administered finely-powdered crystals, immediately preceded or followed by castor oil. The following day crystals were passed in the faeces. Hall does not indicate the nature of the capsules used, but it is unlikely that this would have influenced the absorption of the drug.

In the case of cattle, Olsen[2] believes that hexachlorethane achieves its fasciolicidal effect by being excreted through the bile. This is a very reasonable explanation, but the question immediately arises, in what form is hexachlorethane excreted in the bile and how is it absorbed from the digestive tract? Why can the ruminant absorb the drug while the dog apparently can not?

These are important questions and they will probably have to be answered before the efficacy of hexachlorethane, or a derivative, can be extended to include immature and migrating forms of *Fasciola hepatica.*

I should be very grateful if any of your readers could refer me to literature dealing with the subject or can suggest factors associated with ruminant or canine digestion which would account for the divergent ability of these animals to absorb the drug.

Yours faithfully,

R. P. Lee

(Department of Agriculture, Ireland).

c/o Mr. George Ross,
Food and Agriculture Division,
Economic Co-operation Administration,
800, Connecticut Avenue.
Washington 25, D.C., U.S.A.

November 5th, 1950.

References

1 Hall, M. C., & Cram, E. B. *J. Agric. Res.* **30.** 949-953.
2 Olsen, O. Wilford. *Amer. J. vet. Res.* **8.** 353-366.

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CARE AND MANAGEMENT OF LABORATORY ANIMALS

Sir,—In 1943 we were seeking information about the care and management of laboratory animals and were able, through the hospitality of your columns, to make contact with many scientists using laboratory animals. Thanks to this help and to that of certain expert writers we were able to issue in 1947 "The U.F.A.W Handbook on the Care and Management of Laboratory Animals," edited by Professor A. N. Worden, M.R.C.V.S. As some time has now elapsed since this book appeared we should be most grateful if we might again appeal to all persons interested in laboratory animals to send us suggestions for the improvement of the handbook and any additional information which has come to their notice. The subjects concerning which information is required are as follows:—

The training of animal technicians, animal houses and animal rooms, rabbits, guinea-pigs, rats, mice, voles, hamsters, hedgehogs, ferrets, frogs and other amphibians, fish, anthropoids, dogs, cats, goats, poultry, canaries, pigeons, or any other species of animals used for scientific purposes.

Subject matter can be conveniently forwarded to us grouped under the headings of anaesthesia, euthanasia, supply and breeding, feeding and watering, general management and hygiene, transport by sea, land and air, animal behaviour and psychology.

All the information which reaches us will be most gratefully acknowledged,

Yours faithfully,

F. Jean Vinter,

Technical Secretary.

The Universities Federation for Animal Welfare,
284, Regent's Park Road,
Finchley, London, N.3.

November, 1950.

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V.V.B.F. CHRISTMAS GIFTS

Sir,—The V.V.B. Fund has been able for a number of years past to send a small present of money at Christmas to the 40-odd widows and others, some with large families, who are in receipt of weekly grants. This has been made possible by the generosity of your readers who have sent donations for the purpose.

May we hope that this year we may again receive a good response, so enabling us to bring some little extra comforts and a little extra happiness into these homes at Christmastide.

Donations, however small, will be thankfully received. Please forward your donation, payable to the *V.V.B.F. Christmas Fund A/c.* to the Secretary, V.V.B.F., 9, Red Lion Square, London, W.C.1.

Should any readers prefer to send food parcels direct to our recipients, addresses will be gladly supplied.

Yours faithfully,

P. I. Simpson, *President.*
I. B. Buxton, *Hon. Treasurer.*
A. Spicer, *Hon. Secretary.*

November 10th, 1950.